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JOURNAL

OF THE ROYAL STATISTICAL SOCIETY,

MARCH, 1890.

LONDON SCHOOL OF HYGIENE

AND TROPICAL MEDICINE.

(DEPT OF MEDICAL STATISTICS)

ACCUMULATIONS of CAPITAL *in the UNITED KINGDOM in 1875-85.*

By ROBERT GIFFEN, Esq., LL.D.

[Read before the Royal Statistical Society, 17th December, 1889.

The Right Hon. G. J. GOSCHEN, M.P., in the Chair.]

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HAVING commenced sometime ago a paper in continuation of the paper which I read in January, 1878, on "Recent Accumulations of Capital in the United Kingdom," I found my notes extending to such length as to make rather a book than a single paper. This book will be published immediately,¹ and as the work was begun at the meetings of the Society, I am most happy to avail myself of the permission of the Council to submit to you extracts from this book, continuing in substance the paper of 1878, and dealing with an additional period of ten years. [The book was published early in January by Messrs. George Bell and Sons. The following is a partial summary only.]

I.—*Introductory.*

The special object in view is to discuss the accumulations of capital or growth of capital in a given period. For various reasons economists desire to know the rate of accumulations in a country—to compare the rate of taxation, for instance, with the gross and with the taxable income, to ascertain in what forms mainly the wealth of the country is growing, to compare the growth of capital itself with the growth of population, and so on. It is recognised, however, that only approximate results are obtainable. Imagination shrinks from the task of framing a catalogue or inventory of a nation's property as a valuator would make it: the idea of a

¹ "The Growth of Capital," London: George Bell and Sons.

valuation of the whole property of a country, as if a country could really be valued as a going concern, is itself a violent hypothesis; yet only from such inventories from time to time could the growth of wealth in the same country between two different dates be ascertained, while such growth being expressed in money might itself require correction if for any reason it did not happen to correspond with the growth in things. In the absence of such complete inventories, however, it is thought that an approximation can be made to the results aimed at by valuing the leading items of national property in some definite way, and that this approximation may be tolerably useful as a basis for comparing the growth between two different periods, and for comparing one country with another, although the incompleteness of each inventory itself may be fully recognised. According to well known statistical experience, the comparison of the growth or increment may be reasonably successful if the same method is followed on each occasion in working out the data for the comparison, although these data themselves may be unavoidably incomplete.

I must insist on this point all the more, because, since my former paper was written, attention has, in fact, been withdrawn from the special object in view, and it has been thought, apparently, that such estimates of property can be used for miscellaneous purposes in a way which I believe most dangerous, and that they can be made with a degree of accuracy which I believe to be impossible. Country has been compared with country, and period with period, in the most reckless fashion, without any attention to the comparability of the data. Such figures have even been used officially for the purpose of discussing the relative incidence of taxation on different kinds of property, real and personal being the kinds distinguished. I desire to record an emphatic protest against the employment of a method, which appears good enough for a special purpose in the absence of anything better, for purposes of a totally different kind, where a different degree of accuracy, which the figures are not susceptible of, may be necessary. Whether estimates of property, and the different kinds of it, can be made for such a purpose as discussing the incidence of taxation, or the like practical objects, is a point at least on which I reserve my own opinion. At any rate, those who make such estimates are bound *in limine* to justify their method, and to prove that the necessary degree of accuracy for the purpose they have in view is obtainable. For any such purpose as that now in hand, comparatively rough estimates are all that are required, and comparatively rough estimates are all that it is proposed to make.

The method of estimating the property in the country at different times, which was followed in my former paper, it will

be remembered, was to take the income returned for assessment to the income tax, capitalise the different portions of that income derived from capital—land, houses, and so on,—at so many years' purchase, and then make an estimate for other property in the country where the income was not got within the sweep of the income tax net. A similar method, it may be repeated in passing, as mentioned in the former paper, was first employed by Mr. Newmarch in the *Economist* in 1873. Mr. Newmarch by various calculations had arrived at the opinion that to obtain an idea of the annual accumulation in the country the amount of the income tax assessments might be multiplied by 20, and the difference between the totals at different dates would represent the accumulation. It was with some pleasure I noticed afterwards that Mr. Newmarch in the last paper he read to the Statistical Society adopted the more detailed plan of my former paper, and practically accepted the figures, substituting them for those he had formerly used. In such a method, then, to come to the point I wish now to make, a great deal turns upon the number of years' purchase assigned to each description of income, and the question arises, when valuations at different dates are compared, or when the valuations of different countries are compared, how far is it expedient or necessary to vary the number of years' purchase as regards particular descriptions of property? In my former essay this difficulty was evaded. Dealing with one country only, the question of assigning a different number of years' purchase because of a comparison with other countries or between different parts of the same country, did not arise; while I assumed that as the tendency had rather been in the interval compared, for all classes of income to be valued as time went on, at a greater number of years' purchase, the rate of interest falling in the interval, the effect of ignoring this element would be for the figures stating the accumulation of capital to err rather by defect than by excess, which it was desirable to avoid. Now, however, the question of the number of years' purchase may require discussion. Since 1875 the capital value of many sorts of income, the number of years' purchase for which it will sell, has undoubtedly risen. As regards other kinds of income, however, such as the rent of land, the number of years' purchase at which the same nominal rental will pass in the market, has undoubtedly diminished. The question seems, therefore, not quite so simple as it was. On what basis should changes of the kind be dealt with theoretically if the general totals are likely to be seriously affected? It is proposed also, as will be seen, to compare different parts of the United Kingdom with each other as well as to make more extended comparisons with foreign countries. Here the element

of the number of years' purchase must be dealt with explicitly. In some references a few years ago which I made to the capital of Ireland, I assumed that landed property in that country ought to be valued at a smaller number of years' purchase of the rental than landed property in the rest of the United Kingdom, and I found to my astonishment that some critics assumed the contrary. Because, in capitalising the lands of the United Kingdom, I had assumed so many years' purchase *on the average*, therefore it was to be assumed, I was told, when one part of the kingdom was put against another, that the valuation of each description of property in each part should be at the same number of years' purchase! Such a procedure, in my opinion, would be most absurd. But whatever may be the right conclusion, the subject at any rate, owing to the different circumstances with which I have now to deal, as compared with what was the case formerly, and owing also to the wider scope of the paper, will require the most careful attention.

Another point of some difficulty, which was glided over in my former paper, though not altogether *sub silentio*, has also become too serious to be passed over now in a similar manner. This is the difficulty caused by changes of prices, and—to come to the period now specially under review, viz., the period 1875-85—the difficulty caused by the fall of prices in that interval. The valuations being of property, and the money value of all kinds of property depending on the prices of commodities directly or indirectly, anything which changes the prices must change the valuation. Changes of prices between two different dates, where they are at all serious, have accordingly to be allowed for in estimating the growth of capital by the difference in the two valuations; and the practical difficulty in handling the figures, it will be seen, is somewhat formidable. The point will be dealt with in its order when it arises, but it has to be mentioned at the outset to give all interested warning of a discussion which must take up a great deal of space. It is a purely unavoidable complication of our task.

II.—*The Valuation of 1885.*

The first step to be taken, following the method of the former paper, is to look at the valuation of the nation's property at the present time.

For this purpose the accompanying Table A has been drawn up in a form precisely similar to that of a similar table in 1875. The classification of the items of the nation's property follows closely as far as possible that of the income tax returns, and additions are then made for property which is not accounted for as connected with any income dealt with by the income tax. The

table of 1875, it may be mentioned, is followed so closely that the list of items is word for word the same.

TABLE A.—*Amount of Income in Income Tax Returns, derived from Capital, Number of Years' Purchase at which the same may be Capitalised, and Approximate Amount of Capital; together with Estimate of remaining Income and Capital of the Country.*

[000's omitted in amount columns.]

	Income.	Years' Purchase.	Capital.	Years' Purchase and Capital at Years' Purchase Employed for 1875, where a Change has now been made.	
	£		£		£
<i>Under Schedule A—</i>					
Lands	65,039,	26	1,691,313,*	30	1,951,170,
Houses	128,459,	15	1,926,885,	—	—
Other profits	877,	30	26,310,	—	—
<i>Schedule B—</i>					
(Farmers' profits)	65,233,	8	521,864,	10	652,330,
<i>Schedule C—</i>					
(Public funds less home funds)	21,096,	25	527,400,	—	—
<i>Under Schedule D—</i>					
Quarries	933,	4	3,732,	—	—
Mines	7,603,	4	30,412,	—	—
Ironworks	2,265,	4	9,060,	—	—
Gasworks	5,026,	25	125,650,	20	100,520,
Waterworks	3,260,	20	65,200,	—	—
Canals, &c.	3,546,	20	70,920,	—	—
Fishings	618,	20	12,360,	—	—
Market tolls, &c.	590,	20	11,800,	—	—
Other public companies	34,789,	20	695,780,	15	521,835,
Foreign and colonial securities, } &c.	9,859,	20	197,180,	15	147,885,
Railways in United Kingdom	33,270,	28	931,560,	25	831,750,
„ out of „	3,808,	20	76,160,	—	—
Interest paid out of rates, &c.	5,041,	25	126,025,	—	—
Other profits	1,435,	20	28,700,	—	—
Trades and professions—one-fifth of total income of 180 millions }	36,096,	15	541,440,	—	—
Total under income tax	428,843,	—	7,619,751,	—	7,661,894,
Trades and professions omitted, 20 per cent. of amount assessed, or 36 millions, of which one-fifth is	7,219,	15	108,285,	—	—
Income of non-income tax paying classes derived from capital	960,†	15	14,400,	—	—
Foreign investments, not in Schedules C and D	67,000,	5	335,000,	—	—
Movable property not yielding income, e.g., furniture of houses, &c., works of art, &c.	50,000,	10	500,000,	—	—
Government and local property, say	—	—	960,000,	—	—
	—	—	500,000,	—	—
	554,022,	—	10,037,436,	—	10,079,579,

* This is the result of capitalising lands in Ireland at fifteen years' purchase, and in England and Scotland at twenty-eight years' purchase. The average for the United Kingdom is an infinitesimal fraction over twenty-six years' purchase.

† Estimate of income escaping assessment by raising limit of exemption in 1876.

The table speaks very much for itself, but I have to draw attention to the fact that it has been thought necessary in one or two cases to vary the number of years' purchase from that which was employed in the former paper for 1875, and that where this is done it is noted in supplemental columns what the figures would have been if the number of years' purchase formerly used had been retained. The general effect, it will be seen, is that while there are alterations in the relative amounts of particular items of capital *inter se*, the final totals arrived at are not materially different, in consequence of the changes made in the number of years' purchase, from what they would have been if no such changes had been made. The total valuation now arrived at is 10,037 millions, and if no change had been made in any case in the number of years' purchase the total would have been 10,079 millions.

The next remark to be made is on the magnitude of the sum total arrived at. The round figure of 10,000 millions is about $13\frac{1}{2}$ times the amount of the national debt, and gives a sum of about 270*l.* for every person in the United Kingdom, equal, at an average of five persons per family, to about 1,350*l.* per family. If the valuation is at all moderate, the figure shows how much on the average each family in the United Kingdom possesses.

Of course there are "averages" and "averages." An average may be made up of items where the preponderant numbers individually nearly correspond with it, or it may be made up of items where the preponderant numbers are greatly under it, a minority throwing it up. There is no doubt that, as regards the distribution of wealth in the United Kingdom the average is made up most unevenly. For convenience sake the figures are reduced to so much per head or per family, but the actual distribution is a different matter.

Coming to the different items, the *first* to notice is the valuation of lands, constituting about one-sixth of the total valuation. The income of 65,039,000*l.* capitalised at twenty-six years' purchase shows a capital of 1,691 millions.

The question will perhaps be raised whether twenty-six years' purchase, looking at the uncertainty of rentals, and the unsaleability of land on the basis of actual rentals, is not too high, although it is a great reduction upon the number of thirty years which was employed with general approval in my former paper. It is a great point, however, in such investigations to beware of panic figures, and of extreme quotations characteristic of a transitional and uncertain period. It is too soon yet to tell at what rent land in the United Kingdom will settle after the revolutionary circumstances of the last ten years, the adjustments required by

the new circumstances being still in progress. We may be sure, however, looking at the low rate of interest for money, that the number of years' purchase, when a settlement is made, will in no case be as low as twenty-six, while there is much land at present, which, for residential and other reasons, has not participated in the extreme fall of values of which we have heard so much. The figure of twenty-six years, therefore, is suggested as a safe mean in the present exceptional and transitional circumstances, and in the present uncertainty regarding the income on which the valuation is based.

It may be added also that, in fixing the number of twenty-six years, special regard is had to the peculiar circumstances of Ireland, where it has not been thought safe to assume a higher average than fifteen years on the nominal income tax assessment of about 10 millions which must be largely nominal only. The average assumed for England and Scotland is twenty-eight years, by which a large allowance is made for residential and other land which has not yet participated in the extreme fall to which much land has been subject.

To prevent misconstruction, moreover, I have to remind those interested that the valuation is made as for the year ended 31st March, 1885, when the extreme depreciation of agricultural produce lately witnessed had not yet taken place.

The second item to be noticed is that of "houses." The total income here is over 128 millions, and at fifteen years' purchase the capital is 1,927,000 millions—nearly one-fifth of the total valuation. "Houses" thus constitute the most important item in the valuation, being more important than lands, which at the time of my former paper had still the undoubted pre-eminence, being nearly a fourth of the total.

The value of "houses" alone, per head of the population of the United Kingdom is about 54*l.*, equal to 270*l.* per family, at five persons per family.

To prevent misconstruction, it should be understood that the item of "houses" in Schedule A in the income tax returns, includes not merely dwelling houses, as might at first be supposed, but messuages and tenements generally, that is factories, workshops, warehouses, &c., these appearing to constitute about a fifth part of the total, according to the returns of inhabited house duty; and on the other hand, it does not include "farm houses," which are comprised with the item of lands. Deducting on the one side, however, messuages which are not dwelling houses, and adding on the other side the separate value of farm houses, if it could be separated, the total housing of the people of the United Kingdom would not probably be far short of the figures above stated.

The third item I have to remark on is that of Schedule B (farmers' profits), where the income, 65,233,000*l.*, is substantially the same as that of lands in Schedule A. This income, at eight years' purchase, the figure assumed, brings out a capital of 522 millions.

In this case the figure of eight years is substituted for that of ten years which was employed for 1875, and in making the substitution I have been influenced by the uncertainty of the income, and the exceptional and transitional circumstances, which appeared to necessitate a similar substitution as regards the capital value of lands in Schedule A. In normal circumstances I should consider ten years' purchase the safer number to use on the basis of rental, so as to obtain a total capital corresponding to Schedule B.

The next item to comment upon is that of "Public Funds less "Home Funds," which shows an income of 21,096,000*l.*, and at twenty-five years' purchase a capital of 527 millions. I have to refer here to the fact that the "Home Funds," included in Schedule C, are here omitted in valuing the general property of the country. The reason I gave for this omission was stated as follows in my paper in 1878:—

"As regards the second deduction, it will only be proper, I think, that in such a computation as this, we should not reckon the national debt twice over," and that would be the effect of our capitalising the whole of Schedule C. The national debt is a mortgage upon the aggregate fortune of the country. As we may assume it to be practically all held at home, we may reckon up our whole estate without deducting the debt, whereas we should have to deduct it if it was held by foreigners; but while we do not deduct the debt from the total of our estate, neither can we add it without falling into error."

And I desire to call attention here very specially to the fact that this omission was, and is made. In these figures, the capital represented by the national debt is not represented as part of the property of the community, though, of course, to each individual holding a portion of the national debt the holding is property.

What I have done is clear enough, and I believe that on the whole the reason assigned is a good one. But I should not censure very much any one who included the national debt as a part of the capital of the community. The general reason for such a course would be, that as the debt is a charge upon the resources of the community, the money expression of all the other capital of

² The phrase, "twice over," is a slip. It would have been more accurate to say that the national debt is not reckoned at all, which is the obvious meaning of the passage.

the community is less than it would otherwise be by the amount of the debt. If there were no national debt, lands, houses, and every other description of property would exchange for rather more than they now do. The debt in this view represents a certain distribution of part of the capital of the country, and we do not get a complete view of the capital unless we include it. Where the debt is all held at home, the point may be of importance in making comparisons with other countries, or in making comparisons between different dates in the same country, where the amount of the debt has changed much in the interval. I am bound to admit that in my view there is something in this reasoning, though it seems a strange thing at first sight to talk of debt as capital. Practically, however, for the reasons above given, I have thought it safer not to include the debt, and as regards the United Kingdom, at least, the debt not having changed much in recent years, the point is not of much importance in dealing with the question of the accumulations of capital in a given period.

The next item I notice is that of foreign investments not in Schedules C or D, where a large amount of income, viz., 50 millions, is taken note of, and capitalised at ten years' purchase. Wonder is expressed at so much foreign income escaping taxation, but, in spite of all that has been done since 1875 to get hold of such income for the revenue—and a great deal, I think, has been done—I must appeal to a few broad considerations to justify the figure put down, as I did in my former paper to justify a similar figure.

The best way to look at the matter is to put together all the foreign income which the income tax authorities get hold of, and compare the figures with other known facts:—

	Thousands.
	£
Public funds (Schedule C)	21,096
Foreign and colonial securities (Schedule D)	9,859
Railways out of United Kingdom (Schedule D)	3,808
	<hr/>
	34,763
Foreign investments not in Schedules C or D	50,000
	<hr/>
	84,763
	<hr/>

It is obvious that the 34,763,000*l.* is too small, whatever may be thought of the proposed addition of 50 millions for the income "omitted." I have to submit, however, on this last head the table in the Appendix (Table I), showing from an analysis of Stock Exchange lists how probable it is that the income from foreign public securities alone coming to English people is enormously larger than the sum of 34,763,000*l.* which the income tax authorities get hold of, while there is an immense investment besides

through private channels and mercantile houses with partners and establishments abroad. It should be explained, moreover, that a great deal of this income may escape assessment to the income tax in no improper way. The partners residing abroad of firms which are really English, but which are domiciled abroad, are perhaps under no obligation to return the income, though their wealth and income are English wealth and income, and much profit that may be made by such partners may be eventually brought home as capital and not as income, and so escape assessment.

Let me remark finally on this valuation, that large as the figures are, the estimate of 10,000 millions as the property of the United Kingdom valued as a going concern does not seem unreasonable. Of this sum again, nearly 8,500 millions must be reckoned as income yielding, the corresponding income being about 552 millions. The figures are truly bewildering, but it is quite certain that some such figures are about the mark. Valued as a going concern at the current prices of the individual items of the property, the business carried on by the community within the British Isles, with the property of every kind they possess, would exchange for all this money.

III.—*The Recent Progress.*

Our special business, however, is not with the valuation of the national estate at the present time, but with the accumulation of capital in recent years. For that purpose, instead of the ten years' comparison which was all that was possible when I wrote ten years ago, it is now possible to make a comparison in the same detail for two ten-yearly periods.

I shall begin, however, by comparing 1885 with 1875, which can be compared in the minutest detail, and then go on to compare 1865-75 with 1875-85, which cannot be done in quite so much detail. For this purpose I refer to the valuation for 1875, which appeared in my former paper, and which was published in the Statistical Society's *Journal* for March, 1878. Comparing 1885 with 1875 only, and referring back to the table for 1885, on p. 5, the general result is that the capital of the United Kingdom, which appeared in 1875 to be about 8,500 millions, is now estimated by an exactly similar process at 10,037 millions in 1885. The increase between the two dates is 1,489 millions, or almost exactly $17\frac{1}{2}$ per cent. The increase is not so great as in the previous decade, for if the increase had continued at the former rate of 40 per cent. in ten years, the total estimated capital in 1885, instead of being over 10,000 millions, would have been just under 12,000 millions, and the increase would have

amounted to 3,420 millions instead of being 1,489 millions only. Still the figures are very large, and for the present we may postpone any discussion of the relative rate of growth in 1865-75 and the more recent period.

The more prominent details, apart from the special questions to be presently discussed, do not seem to require much comment. I shall make a few observations on the principal items in their order.

1. No one will be surprised at the reduction shown in the item of lands. The income assessed has fallen from 66,911,000*l.* to 65,039,000*l.*, and as the number of years' purchase assigned is also less, there is a corresponding reduction of capital amounting to 316 millions on a total of 2,007 millions, or over 15 per cent.

If there is any surprise at all it will be that the reduction is not much greater. The fall in the value of agricultural produce, and the consequent fall in rents, have been notorious. The wonder will be that the income from lands in these returns, and consequently the capitalised value, according to the method of estimating here followed, have not fallen more.

In explanation, I have to suggest the following reasons why the reduction of income and capital here shown should not correspond to the popular impression of what has been going on:—

(a.) The valuation follows somewhat slowly the change in the property itself, and the maximum valuation of lands, before the fall of prices began to have effect, was not reached until after 1875, the fall of prices not beginning to tell until about 1881.

(b.) To some extent the figures of the income tax valuation as regards lands have been stereotyped. In past times, it may be allowed, they did not show the real variation in money income that took place from period to period; and as they did not show the increase, neither have they shown the decrease. This is especially the case as regards Irish land, where Griffith's valuation seems to have been followed year after year, although it was much under the rents of 1875, and is not now nearly so much under them.

A defect of this kind in the income tax valuations is, of course, a drawback to the use of them in showing the accumulations of capital in different periods, and if it were general throughout the returns would make it hardly possible to use them at all; but there is no reason to believe the defect to be at all general.

(c.) A large amount of "lands" has practically a residential as distinguished from an agricultural value, and the capital value of such lands will not change as that of merely agricultural land changes.

(d.) The income from different sorts of agricultural land has

diminished in very varying degrees, while the effect on landlords' rent has also been partially mitigated by the fact that tenant farmers, as a rule, in England have not been rackrented, that they have had virtually a beneficial interest in their holdings, and that the loss by agricultural depression has not consequently fallen so exclusively on landlords' rent as it would otherwise have done.

All these are reasons for the item of land not showing as great a diminution in these returns as it might have been expected to do. The diminution of rent should not have so much effect as is commonly supposed, and the effect in any case is partly postponed. The result will be that when we come to deal with another period of ten years, the increase, if there is an increase, will not appear so great as it would otherwise do; and the decrease, if there is a decrease, will appear to be more than it will really be, reckoning from the present date—*i.e.*, 1884-85.

2. The next item to comment upon is houses, which show a very large increase—quite as great, nearly, though this is anticipating a little, as the increase between 1865 and 1875. The capital of houses is now much more than lands, being just under 2,000 millions, and the increase in the decade has been 507 millions, or nearly 36 per cent. Houses, as already noticed, are now the main item in the whole valuation.

Part of the increase may be due to more stringent valuation, a remark which applies to all the heads of the income tax; but, on the whole, the progress in houses seems to correspond fairly well with progress in the country.

We should have expected, perhaps, as the result of the fall of prices, that the increase would not have been quite so great. It is to be observed that the greater part of the increase took place in the first five or six years of the decade, when almost all values were still swelling rapidly. In the last four or five years it has been at a slower rate.

3. The next important item is that of Schedule B—farmers' profits, as it is popularly called, though it includes, as already explained, a good deal more than farmers' profits. Here the decrease corresponds to that of the item "lands," the two valuations being, in fact, substantially the same, and being expressly, according to law, made upon rental in the absence of a formal claim by the farmer, to be assessed after the method of Schedule D, which is practically never made.

Here the change calls for little remark. The reduction of capital in the ten years is from 667 millions to 522 millions, or between 20 and 25 per cent. It seems doubtful whether the diminution in agricultural capital has not been more. One hears of the tenant farmers having lost three rents, or about 200 millions.

I have to suggest, however, as is done regarding lands, that the years 1875 and 1885 do not correspond precisely to the maximum and minimum years which mark the whole change from better to worse in agriculture. Farther, the loss to the farmer is not the same thing for our present purpose as the loss of agricultural capital itself. The tenant farmer's loss may well have been borne in part out of current income, or out of other funds of his own, or at the expense of creditors. The things constituting the capital, the live stock, &c., may have remained, and in fact, seem to have largely remained, and are only now valued at lower prices. In putting the present figures in the table, therefore, I must not be understood as under-valuing the amount of the farmer's losses.

Of course, the loss is brought out very largely in the comparison by changing the number of years' purchase, but for this good reason has been shown.

4. Passing every minor item, we come to the item of railways in the United Kingdom, which show an increase in income in the ten years from 26,215,000*l.* to 33,270,000*l.*, and in capital from 655 millions to 931 millions. A large part of the increase of capital is, of course, due to the increase in the number of years' purchase assigned; but even without this enhancement the change would have been very great, as the figures of capital at the present time would then have stood at 832 millions. Here the figures may be compared with the railway returns themselves, which give for, practically, the same dates, viz., the calendar years 1874 and 1884, an increase in income from 26,643,000*l.* to 33,305,000*l.*, and in capital from 610 millions to 801 millions. The figures as to capital in the two statements do not correspond, an important difference being made by the change in the number of years' purchase employed in the calculation. Nothing more need be said, however, than what has already been said generally, or will be said later on. The magnitude of railway capital, in reference to capital generally, could not be shown without taking note of its selling value. In any case, it may be pointed out, the railway return itself does not contain figures of actual investment. The record of actual investment in railways would show even a smaller figure than that shown by the railway return of capital itself. The real investment of railway capital, whether profitable or not, is not the difference in nominal capital shown between 1874 and 1884, amounting to 191 millions, but probably not more than 170 millions, the actual new cash outlay in the interval.

I come, last, to the question of foreign investments, which affects many items in the tables. Putting all the items together, the comparison between 1875 and 1885 is as follows:—

	1875.	1885.	Increase.
	Mins. £	Mins. £	Mins. £
Public funds, less house funds } (Schedule C)	20·7	21·1	0·4
Foreign and colonial securities } (Schedule D)	6·8	9·8	3·0
Railways out of United Kingdom } (Schedule D)	1·3	3·8	2·5
Foreign investments not in C or D } (estimated).....	40·0	50·0	10·0
	68·8	84·7	15·9

It cannot be said upon these figures that the estimate of the increase of foreign investments between 1875 and 1885 is at all excessive. The total increase of income assumed is under 16 millions sterling, which would represent, at twenty years' purchase, more than the average, a capital of 320 millions only, or 32 millions per annum. Allowing for all the capital called in from abroad, of which we have heard so much, it must be admitted, I think, that the foreign investments between 1875 and 1885 were more than some 30 millions per annum. I have only to refer on this head to a table which was appended to my essay on the "Use of Import and Export Statistics," which was read to the Statistical Society in March, 1882,³ and which I propose to continue in the *Journal* of the Statistical Society. It appears that the actual new issues in the ten years 1876-85 of colonial Government loans, municipal loans, foreign Government loans, and railway issues were about 362 millions—a larger amount than the sum arrived at by capitalising the assumed addition to the income from foreign investments between 1875 and 1885. In addition there were issues of miscellaneous companies and mining companies to a large amount. Besides all this, there is the private investment, which must be very large. Of course the period between 1875 and 1882 includes the period of the foreign loan collapses, but the table in the Appendix (Table I), it will be observed, which compares with a similar table for 1875, is constructed in such a way as to allow for all such collapses. After all, the collapse of Turkish and Peruvian loans and a few minor issues, were as nothing to the great business of the market, the collapse at a later date in American railway issues being substantially more serious. Making all allowances, then, the increase here reckoned for the ten years is by no means excessive.

³ See "Essays in Finance," second series, second edition. London: George Bell and Sons. The table here referred to is printed in the Statistical Society's *Journal* for June, 1882.

So much for the comparison between 1875 and 1885. I have next to call attention to a comparison between the progress shown in 1865 and 1875, and the progress now shown.

Between 1865 and 1875 the increase in total capital was from 6,113 millions to 8,548 millions, an increase of 2,435 millions, or 40 per cent.; whereas now the increase is from 8,548 to 10,037 millions, or 1,489 millions, and $17\frac{1}{2}$ per cent. only. Both in amount and percentage the increase in the second ten years is considerably less than in the first ten. Omitting the supplementary items, which are not directly based on income tax assessments, the difference is just as remarkable. The increase between 1865 and 1875 was from 4,938 millions to 6,643 millions, an increase of 1,705 millions, or 35 per cent.; between 1875 and 1885 it is from 6,643 to 7,620 millions, an increase of 977 millions, or about 15 per cent. A little difference would be made in the latter period by adding in about 50 millions of capital representing income transferred from the higher to the lower part of the table in consequence of the change in the lower limit of the income tax, but the difference would not be very material. The rate of increase in the latter period would still be less than half what it was in the earlier period.

Looking at the comparison in more detail, the first broad fact noticeable appears to be that, whereas between 1865 and 1875 every item of capital shows an increase—in some cases very little in proportion, but in others a great deal—yet between 1875 and 1885 there are, as already noticed, a good many items of decrease. Lands Schedule B, and mines and ironworks, are all cases of actual decrease—in some cases of very great decrease between 1875 and 1885—although in each case in the previous period there was an increase, and that increase in the case of mines and ironworks was very large, amounting to 195 and 314 per cent. respectively. Next, it is to be noticed that the rate of increase generally between 1875 and 1885, where there is an increase, is much less, with one or two exceptions, than in the previous ten years, and where the increase is now at an equal or greater rate, it is owing, in part, to the increase in the number of years' purchase at which the income has been capitalised. The following comparison brings the facts on this head to a point:—

Increase per Cent. of certain Items of Capital in 1865-75 and 1875-85 compared.

	1865-75.	1875-85.
Houses	38	35·7
Public funds, less home funds	146	1·5
Railways, United Kingdom	58	42·0*
Canals, &c.	11	255·0
Gasworks	43	138·0*
"Other profits"	53	38·0
Other income tax income	71	47·5*
Trades and professions omitted	40	3·0
Means of non-income tax paying classes	50	16·0
Foreign investments, &c.	300	25·0
Movable property not yielding income	40	37·0
Government and local property	33	25·0

* In these cases part of the enhancement of capital is due to the increase of the number of years' purchase at which the whole or part of the income is capitalised.

In all directions, therefore, there is a diminution in the rate of increase in the later, as compared with the earlier period. The two exceptions are those of canals, &c., and gasworks, where the amounts are too small to be material, and where, in one case, at least—that of canals, &c.—the apparent increase is not improbably due to transfers, and in the other the increase is largely due to the increased number of years' purchase at which the income is capitalised. The broad fact that the change in the rate of increase in the two periods extends throughout almost all the items of the comparison, a decrease in some cases being substituted for an increase, and in others a less rate of increase shown, is not to be qualified in any way. The decrease shown in the general totals is made up of minor changes, all in the same direction.

The only apparent exception to the general change is formed by "houses," and in the corresponding item of capital in the supplementary part of the table, viz., movable property not yielding income, where the estimate is based on the assumption that such property bears a certain proportion to the capital value of the houses. Here it will be seen the rate of increase in 1865-75 is fairly well maintained in 1875-85. The maintenance of the former rate, however, as regards these two large items, implies, of course, that the general reduction on other heads must be somewhat more than the average of the above totals.

As regards these two special items, again, the point already noticed, that in the last half of the last decade the rate of increase here has slackened greatly, would require serious consideration in forming any conclusions as to the present growth of property in

the country as far as its money expression is concerned. There is nothing, indeed, to alter the general impression given by the figures that in the last decade, as compared with the previous decade, something must have happened to diminish the rate of accumulation of capital as expressed in money. The increase in the last decade is not inconsiderable, and if comparison were not made with a preceding decade of a different character would be accepted at once as completely satisfactory, but the comparison cannot but be made and the causes of the difference must be sought for.

IV.—*Distribution of Wealth between England, Scotland, and Ireland.*

Writing in 1878, I made no attempt to show the distribution of wealth between the communities of England, Scotland, and Ireland, which compose the United Kingdom. I regard any attempt at such a comparison very doubtfully indeed. The people constituting the United Kingdom are closely intermixed in their business relations. Property in one part of the kingdom is held by people resident in another part; there are not a few whose domicile is by no means certain, who are as fixed in Scotland or Ireland as they are in England, leading, in fact, a dual existence, part "in the country," in Scotland or Ireland, and part in the metropolis; so that for the purposes of a comparison like the present, they cannot be classed as distinctly and exclusively English or Scotch or Irish. There is, moreover, a considerable amount of foreign property belonging to people in all parts of the United Kingdom, but assessed exclusively in the metropolis. An exact division between England, Scotland, and Ireland, representing the wealth of each section, as the table above given represents the wealth of the United Kingdom, is accordingly impossible.

I have been encouraged, however, to make an attempt at separation, as useful for certain political computations, as helping, if properly done, to show the relative strength of the metropolitan community, that of England, in comparison with the comparatively outlying communities of Scotland and Ireland. In doing so we must make the assumption that, on the whole, the foreign income, and certain other income, must be assigned exclusively or mainly to the metropolitan community, because it really belongs to the people of the United Kingdom in their metropolitan and even cosmopolitan capacity, and on a division, if such a thing were conceivable, would most probably go with the metropolis.

For the rest, it will probably be convenient to follow the divisions of the income tax assessment generally, and credit to each community the property locally situated, although we know, for

instance, that railway shares and other property in Ireland and Scotland are held in England, and *vice versâ*. The presumption is that this mode of division will not assign too little to Scotland and Ireland; it will even assign to these countries so much in excess as to be a set-off against any defect that may arise through the whole or larger part of the metropolitan or cosmopolitan capital, as above explained, being assigned to England.

I have accordingly to refer to tables which will be found in the book, in which such a division between England, Scotland, and Ireland is attempted. These tables follow exactly the model of Table A inserted above (p. 5), so that it will be easy to compare the details of each section with the similar details for the United Kingdom as well as for each other.

The general effect is striking enough. The preponderance of England is manifest. Scotland is a long way behind. Ireland is comparatively insignificant. If we include the element of population, Scotland is not far behind England in the amount per head, but Ireland is a long way behind.

In the following short table a comparison is made both of total amounts and of the amounts per head:—

Property in England, Scotland, and Ireland, and the Amount per Head of Population Compared.

[The calculations are made on the population of 1887.]

	Property.	Per Cent. of Total.	Property per Head.
	Mln. £		£
England	8,617	86·0	308
Scotland	973	9·7	243
Ireland	447*	4·3	93
Total	10,037	100·0	270

* In roughly estimating, in 1886, in a paper on "The Economic Value of Ireland to Great Britain," I put the total capital of Ireland at about 400 millions. The present figure I should still think too high if a strict account were taken, but I have followed here the method explained in the text, of distributing the income tax income, which gives some advantage to Ireland. The present is also a more detailed statement than that of 1886.

England, in fact, on this showing, possesses rather more than $8\frac{1}{2}$ tenths of the wealth of the United Kingdom; Scotland about a tenth; and Ireland less than half a tenth. The wealth of the metropolitan community is equal to about 308*l.* per head; of Scotland to 243*l.* per head, or rather less than the average of the United Kingdom; of Ireland to about one-third of the average, or about 93*l.* per head only.

A rapid survey reveals in a moment how these great differences arise. Apart from land in Schedules A and B, Ireland possesses

very little of the great elements of capital which constitute the wealth of the United Kingdom. Its total capital connected with income tax income is only about 400 millions, and of this about 230 millions arises from land in Schedule A, or the occupation of land in Schedule B, leaving only 170 millions as the whole capital of the Irish people in connection with the other schedules. The income in Ireland under Schedule A for land and houses is valued at a smaller number of years' purchase than similar income in Great Britain, a point which will be discussed presently; but this is not the case with other income. Ireland is, in fact, singularly destitute of all the constituents of wealth under Schedule D; its total income under this head above the income tax limit being about 4 millions only, as against a similar income in the whole of the United Kingdom of 148 millions; so that Ireland, as regards Schedule D, is one-thirty-seventh only of the United Kingdom. It is in this way, then, that the difference between Ireland and the rest of the United Kingdom arises.

No doubt some difference is also made by the difference in the number of years' purchase at which certain property in Ireland is valued, as compared with similar property in the United Kingdom. Land in Ireland is valued at fifteen years' purchase only, as compared with twenty-eight years' purchase in England and Scotland; and houses in Ireland are valued at twelve years' purchase only, as compared with fifteen years' purchase in England and Scotland. Even, however, if we applied the same number of years' purchase in Ireland and Scotland, the valuation of wealth in Ireland would still lag far behind in its proportion to that of its neighbours. About 140 millions would be added to its total capital, and the amount would remain under 600 millions, about a seventeenth, in place of a twenty-third, part of the wealth of the United Kingdom.

There is, however, I contend, no justification for estimating income from Irish land and houses at a similar number of years' purchase as similar property in the United Kingdom. We should get a false idea of Irish wealth and relative resources if we did so.

The reason as regards houses, the smaller item, is plain. The average rent of houses in Ireland is much below what it is in England or Scotland, and the lower the rent, at any rate when it is very low, the smaller number of years' purchase it is worth. I need hardly add that many of the so-called houses in Ireland for which rent is paid are merely huts, and not properly comparable with the houses of a more advanced community. The property is not of the same kind.

The reason as regards land is, first, that from the exceptional difficulty of collecting small rents, land in Ireland being in smaller holdings than in Great Britain, there is more difference in Ireland

between gross and net rental than in England and Scotland. The capital value is really less because the net income on the same gross figures is not really so large. Next, and even more important, the income from land in Ireland, like all other income to some extent, but even in greater degree, is rendered insecure by the political agitator, and its capital value is consequently less than it would be if politics were more stable. The difference is a real loss to the insecure community. It means that the general credit of the community in proportion to its income is less than that of a more stable community with the same income; it can do less with what seems the same property than a more stable community can. Individually the loss is marked enough. The same amount of income in the one community actually exchanges for less than it does in the other. The test of the market proves that is not the same thing.

Fifteen years' purchase for the income of Irish land may seem too little; but the rental itself in the income tax returns, it must be remembered, is a little exaggerated above the reality, as many Irish landlords only too well know. The net ascertained and paid rental may sell for more than fifteen years' purchase, though according to recent reports of sales not for very much more; but the nominal rental here in question is as moderately valued at fifteen years' purchase as the similar rental in England and Scotland at twenty-eight.

Another point is raised by these comparative valuations. If the rent of land in Schedule A, it is said, cannot be valued at more than fifteen years' purchase, ought not the capital value of tenant right to be included under Schedule B, the tenant in Ireland possessing a property of a kind which is not possessed by the tenant in England or Scotland, and which is, in fact, saleable? The answer to this is in part that it will be found something is in fact credited to Irish agricultural capital under Schedule B, which is not credited to the same capital in England and Scotland, because Irish occupation capital in proportion to rent, apart from tenant right, is not so large as in England or Scotland, and yet the same number of years' purchase is applied. But I object to including the capital value of tenant right, except to a very moderate degree, as being, in fact, not a positive quantity which can come into comparisons like the present, the so-called capital value of tenant right being largely a fine which the excessive land hunger compels farmers to pay to live, and not a real capital asset which would be available on a large scale in the open market. Even if sales of tenant right, therefore, were better recorded than they are, and the means existed for forming *avérages* over Ireland, I should doubt the propriety of allowing for this capital value to

more than a moderate extent—to such extent, for instance, as would include the cost of the houses which tenants have built, and other substantial improvements in the way of drainage and manuring they have made. The fine paid for right to live is not to be reckoned, at any rate in comparison with a country where no such fines are paid, and where the rental is unquestionably a simple bargain between landlord and tenant, the tenant professedly having nothing but the occupation capital.

It is fair also to add, I think, that Irish capital is not only greatly less than it would otherwise be, owing to the political insecurity of the country, but it is also lessened by the excess of its population above what is needed for the most fitting agriculture. Rent is below what it is in England for similar qualities of land, because the land has to support a larger cultivating population, and rent, of course, is only possible after the cultivating population, according to the scale of living it is able to maintain, has been supported. With a different arrangement for cultivation, requiring a smaller population, rent might be increased on the one hand, and the comfort of the cultivating population on the other, in which case the capital value of the land would undoubtedly be much increased. The possibility of a great increase of Irish capital, as soon as the political and economic causes of its being so small as it is are removed, must accordingly be recognised. Political insecurity and over-population combined probably make its capital less than it would otherwise be even now by from 200 to 300 millions sterling, the mischief being about equally divided between the two causes of evil specified. Whatever figure we may place upon it, the loss must be very great.

I have referred very little in these remarks to the case of Scotland, because it is so much on all fours with that of England. It is not a contrast to England. As showing the difference, however, between a politically insecure country and one that is every way secure, and between a country with an excessive cultivating population and one free from that evil, it may be pointed out that while Scotland, as regards land, has rather less income than Ireland, though not so very much less in spite of its smaller area, yet with a population of just under 4 millions, as compared with nearly 5 in Ireland, it has more than twice the capital—973 millions, as compared with 447 in Ireland—and that this difference largely arises in connection with Schedule D. The income in Scotland from capital under Schedule D dealt with in the tables in the book is in fact about 15 millions sterling, as compared with 4 millions from the same sources in Ireland. No contrast could be more striking.

The main lesson of the whole comparison is, however, that already given, viz., the predominance of the metropolitan com-

munity of England. Reckoning by wealth, England should have 86 per cent. of the representation of the United Kingdom, or 576 members out of 670. Scotland by the same rule should have about 64 only; and Ireland no more than 30. These are very different figures from those which actual politics have established, or which the exact proportions of population would give, though even the latter would give a smaller representation to the weaker parts of the community than is now given. But for all that they point to a real weakness, I believe, in our present constitutional arrangements. It is neither wise nor prudent to make so complete a divorce as has now been made between the real strength of different parts of the population of the United Kingdom and the representation in Parliament. There should be a representation of forces in Parliament, if we had perfectly just arrangements, and not merely a counting of heads. Nothing can be more absurd to the mind of any student of politics, who knows how forces rule in the long run, than the system now established as between the metropolitan community of England and its companions in sovereignty by which one of the companion communities, and that the least entitled to privilege, obtains most disproportionate power.

V.—*Historical Retrospect.*

Another comparison to be made is that between the figures of the present time and more distant periods. It will of course be impossible in such comparisons to show the same details as in the recent years, when we have the benefit of income tax returns on the same basis for several periods, but the older totals at least, and possibly some of the main details, may be compared with those of the present time. In certain respects I am inclined to think the figures we are using are more serviceable and trustworthy, when the right precautions are taken, for extended historical comparisons than for any other purpose. The great intervals of time and the great differences in the figures, in these extended historical comparisons, bring out certain facts with marvellous clearness, which could not be brought out in any other way.

It is most interesting to find that the inquiry as to past valuations of aggregate property takes us back to a period in which statistical studies in this country to a certain extent originated, and to authors who are well known as among the founders of the study, which they called by the name of political arithmetic. The period is the latter part of the seventeenth century, and the authors are Sir William Petty and Sir William Davenant, both of whom devoted no little attention to this very question of the valuation of aggregate property, including the connected subject of aggregate income. In fact one of the main objects of their "political arithmetic" was to obtain an idea of the resources of the country,

and of their growth, partly for purposes of taxation, and partly for comparison with the resources and growth of England's dependents or neighbours at the time: Ireland, France, and Holland being the chief countries considered. The subject has only been intermittently studied in the same form since, but those who began, we may believe, had a good idea of what they were about, and it is all the more instructive, therefore, for us to go back in this matter to the earliest promoters of formal statistical knowledge in this country.

A short table, putting the leading results together, and introducing a comparison per head all through, may be interesting:—

Growth of Capital and Population in England and the United Kingdom since 1600. [In round figures.]

Year.	Population.	Property.	Property per Head.
	Mlms.	Mlms. stng.	£
1600..... (British Merchant, &c.)	4½	100	22
1680..... (Petty)	5½	250	46
1690..... (Gregory King-Davenant)	5½	320	58
1720..... (British Merchant)	6½	370	57
1750..... (Various)	7	500	71
1800..... (Beeke)	9	1,500	167
GREAT BRITAIN.			
Beeke	11	1,750	160
UNITED KINGDOM.			
1812..... (Colquhoun)	17	2,700	160
1822..... (Colquhoun-Lowe)	21	2,500	120
1833..... (Colquhoun-Pablo de Pabrer)	25	3,600	144
1845..... (Income tax)	28	4,000	143
1865.....	30	6,000	200
'75.....	33	8,500	260
Present time	37	10,000	270

The changes are thus constantly in an upward direction, with the exception of the short period between 1812 and 1822, when allowance had to be made for the fall in prices. No doubt part of the rise, with the exception of that in the present century, may be ascribed to the rise in prices which undoubtedly took place in the first year of the seventeenth and the latter part of the eighteenth

century, but on the whole there is a vast real advance, as well as a nominal advance, all through. As already remarked, as far as the increase in the present century is concerned, comparing the latest with the earliest date, no part can be ascribed to the rise of prices, since prices are now at the lowest level on which they have been since the beginning of the century. There may have been some such rise affecting the valuations of 1865 and 1875, but that rise has since been lost, and comparing the present time with a date like 1812, and perhaps 1800, there is undoubtedly a fall of prices.

It is interesting to observe also the variations in the amounts of some of the principal items of property and their proportions to the total. I need only show the two items, land and houses, and at one or two of the dates only:—

Summary showing the Growth of Lands and Houses in their Proportion to Total Property.

	Land.		Houses.	
	Amount. Mlms. stlmg.	Proportion per Cent. of Total.	Amount. Mlms. stlmg.	Proportion per Cent. of Total.
ENGLAND.				
1690! (Gregory King)	180	60	45	15
1800 (Beeke)	600	40	180	15
UNITED KINGDOM.				
1812 (Colquhoun)	1,200	44	400	15
1865	1,864	30	1,031	17
'75	2,007	24	1,420	17
'85	1,691	17	1,927	19

Thus lands, from constituting at the beginning of the period 60 per cent. of the property of the country, and while forming as late as 1865 about 30 per cent. of the property, do not now constitute 20 per cent. of the total, there having also been in the most recent years an absolute decrease in amount, while other capital is increasing. Houses, on the other hand, maintain a rather increasing proportion of a total property, which is itself constantly increasing in amount; and in the last period of all this tendency has been accentuated till houses—buildings—have come to constitute a fifth part of the total property of the country. Changes like this have undoubtedly been in progress. The proportion of individual property held in land has been steadily diminishing, other property increasing by leaps and bounds, while land, though participating in the unearned increment, has improved more slowly, and of late years has diminished absolutely in value, owing to the

unearned increment having for the moment disappeared under the influence of foreign competition. At the same time the progress of civilisation is steadily marked by the growth and improvement of buildings, which increase not only with population and the increase of property generally, but in even a greater ratio.

This is hardly the place to introduce general economic remarks, or deduce special lessons from the figures. I should like, however, just to say a word, in passing, on a question which will perhaps occur to many: How do these figures bear on the problem of the improvement or deterioration of the masses from period to period? I think it has been sufficiently demonstrated, that in the last fifty years there has been progress all round; in recent years, as I need not remind you, not so much at the top as lower down; but it is alleged that just fifty years ago the masses had sustained a special deterioration. Sometime ago, on the strength of mortality and other statistics, I put in a *caveat* against this conclusion, and on the strength of the figures here given I am disposed to strengthen this *caveat*. All through it seems to me there must have been improvement all round. The necessary effect of a continuous increase of capital is dispersal. If the land monopoly had been constantly absorbing more and more of the national earnings through unearned increment, the conclusion might have been different, but the unearned increment is plainly *un peu de chose*. What all the figures point to is that there has been a steady levelling up among the masses for several centuries; that this improvement largely takes the shape of constant additions to the lower middle class and the upper artisan class; and that there is a residuum which does not improve much, and hardly, by comparison, seems to improve at all, but this residuum certainly diminishes in proportion, and probably diminishes in absolute amount, from century to century and from period to period. It would be impossible to set out fully here the facts supporting this view; but as the question may arise on the general figures here exhibited, I desire to anticipate a natural and hasty, but what I believe a most erroneous conclusion, inconsistent with many other facts.

VI.—*Accumulations of Capital in Foreign Countries.*

I propose now to consider for a little the question of the accumulations of capital in other countries. What estimates on the subject have been made by our principal neighbours? and how far are the results arrived at comparable with our own?

The United States is above all the foreign country, if it is correct to speak of it as a foreign country at all, in which we are most interested, while it is also a country in which, for a considerable period, attempts at a national valuation have been made. Let us look, then, first at what is done in the United States.

For this purpose I extract from my former essay, with the addition of the figures for 1880, a statement of the comparative growth of capital in the United States according to the "true valuation" since 1850, and with an estimate on a similar basis for the census periods before that made by the United States census authorities. The figures before 1870, it should be explained, include the valuation of slaves in the Southern States; and there are, of course, other minor discrepancies, in consequence of changes, of which there is no record, in the method of valuation, but the real growth must evidently have been so large that minor discrepancies are lost. As explained in a note, also, the figures for 1870 are subject to a deduction of 15 per cent., or thereabouts, so as to reduce them to a gold valuation; and it will, of course, be understood that all the figures are subject to further deduction on account of foreign capital invested in the United States.

FOREIGN ACCUMULATIONS.—*Statement showing the Population* and Wealth of the United States by Decades from 1790 to 1880; Decennial Percentage Increase of Population; Decennial Percentage of Increase of National Wealth; and Average Property to each Person.*

[See table, p. 186, of "Essays in Finance," first series.]

Year.	Population.	Wealth.	Decennial Percentage Increase.		Average Property to each Person.
			Population.	Wealth.	
	Mins.	Mln. \$			\$
1790.....	3'9	750 (estimated)	—	—	187'00
1800.....	5'3	1,072 "	35'02	43'00	202'13
'10.....	7'2	1,500 "	36'43	39'00	207'20
'20.....	9'6	1,882 "	33'13	25'40	195'00
'30.....	12'8	2,653 "	33'49	41'00	206'00
'40.....	17'0	3,764 (official)	32'67	41'70	220'00
'50.....	23'2	7,136 "	35'87	89'60	307'67
'60.....	31'5	16,159 "	35'59	126'42	510'00
'70.....	38'5	30,069 "	22'00	86'13	776'96*
'80.....	50'1	43,642 "	30'13	45'47	870'00

* Allowance ought to be made here for the depreciation of the dollar between 1860 and 1870. In the introduction to vol. vii of the "Tenth Census of the United States," p. 8, it is also stated that between 1860 and 1870 allowance ought also to be made for the fact that slave property is included in the former census and had disappeared in the latter. Mr. Gannett suggests that, including slave property in 1860, as well as in 1870, and allowing for the depreciation of the dollar in 1870, *i.e.*, reducing the values at that date to gold values, the more approximately correct figures of the true valuation for 1860 and 1870 would be:—

1860..... 9,253 million dollars.

'70..... 23,973 "

I have thought it more convenient, however, to retain the official figures in the text. It brings to a point, what is said elsewhere, as to the importance of price in these valuations.

Deducting for foreign capital invested in the United States the figures would still be very large.

This statement may be compared with the similar statement for the United Kingdom (*supra* p. 23). The growth in the United States absolutely is greater than in the United Kingdom, but the wealth of the latter community per head is still the larger.

It must be kept in mind, of course, that the comparison is here of capital and not of income. Nothing would, in fact, be more interesting than to show the different relation of income to capital in different countries. It does not follow that because one community is inferior to another in the exchangeable value of its property either in total amount or per head, therefore everything has been said as to their relative resources. The differences in the stage of economic development they have reached, the potentialities as well as the actualities of their condition, the earning power as distinguished from the exchangeable value of the property, are all matters to be considered. The property test is useful as far as it goes, but it is not the only test. As we can all see, these points must be specially kept in mind with regard to the United States. A new country so full of undeveloped resources may develop much quicker than another. The comparison one day shows it to be inferior in capital or property to another community; but the next time we look the whole position may be changed.

Let us next turn to France, which, for historical reasons, as well as reasons of neighbourhood, is by far the most interesting country to us,—next, at any rate, to the United States.

Here we find computations of national wealth have been made, especially in recent years, as to which we may put the question how far they are comparable with our own.

M. de Foville, whose name is so well known in this country, and whom every statistician must honour greatly for the good work he has done, has investigated the subject so thoroughly as regards France, summing up what has been done by others as well as himself, that one is necessarily spared a great deal of labour in the discussion. If there is any imperfection in our reference, it will be easy for those interested to refer to the various writings of M. de Foville.

It is obvious, then, at the outset, that it would not do to accept any valuation of property for another country, and compare it with the figures above set out for the United Kingdom, and we must now add the United States figures, without looking into the details, and understanding the process by which the account is made up. M. de Foville gives the following list of different estimates in recent years, and although the first is, perhaps, of too old a date to be comparable, yet the others are obviously recent enough, regard

being had to the slow growth of population in France, to justify the expectation that they would approximate closer than they do if they were all made on the same basis:—

*Estimates of Property in France.**

[Mlns. sterling.]

Authors.	Date.	Real Property.	Personal Property.	Total.
		£	£	£
M. de Girardin	1853	3,680	1,320	5,000
M. Wolowski	'71	4,800	2,200	7,000
M. C. Duc d'Ayen	'72	4,000	3,800	7,800
M. C. D. Vacher	'78	8,640	1,760	10,400
M. Amelin	'78	5,400	4,200	9,600
M. S. Mony	'81	4,600	4,040	8,640

* M. de Foville, "La France Economique," p. 438.

M. de Foville himself made the following estimate in 1878, which he supplements by a less detailed estimate for the present time in his recent book, "La France Economique:"—

M. de Foville's Estimates of French Property.

[Mlns. sterling.]

1878.*	£	1886.†	£
Real property, exclusive of } houses	4,000	Real property, exclusive of } houses	3,200
Houses, &c.	1,000		
French property abroad	600		
Gold and silver.....	320	Houses, &c.	1,600
Furniture, personal property, } works of art	400		
Agricultural "material".....	160	French funds and foreign } securities	1,200
Farm animals and others	200		
Agricultural "approvisionnement"	200		
Other commercial capital	200	Other movable property	2,000
„ industrial „	800		
Marine, arsenals, &c.	120		
Total	8,000	Total	8,000

* "Economiste Français," 18th January, 1879.

† "La France Economique," p. 442.

The estimate for the present time is much the same in total as for 1878, but the details are generally not comparable. In reality, the 1886 estimate is less than the 1878 estimate, as it includes the amount of the French national debt not included in the 1878 estimate, but that there is ground for a reduction of some sort, or,

at any rate, for little or no increase, is justified by M. de Foville on the score of the fall in prices and the consequent fall in value of much real and other property in the interval.

In two respects, it will be observed, the above figures for the present time differ from those employed for the United Kingdom. They include in the valuation of property the amount of the home debt, which is not included in the above valuation for the United Kingdom, and which in France is a larger sum than it is in the United Kingdom, and they do not include the amount of Government and local property, which items are included in the valuation of the United Kingdom. M. de Foville discusses this point; and, making an addition to his figures for the present time, so as to include the property of Government and local authorities, and then deducting the aggregate amount of their debts, he arrives at a sum of about 7,200 millions sterling, which would be properly comparable, as far as I can judge, with the valuation of the United Kingdom.

An examination of the details confirms the *vraisemblance* of these figures for France.

There is no doubt also that the growth of property in France has been very rapid during the present century as in the United Kingdom. The following are the French succession duty figures at ten years' intervals since 1826:—

Successions and Donations inter vivos Annually Taxed in France at the undermentioned Dates.

	Successions.	Donations.	Total.
	Mlns. stling. £	Mlns. stling. £	Mlns. stling. £
1826.....	53'5	18'0	71'5
'35.....	61'6	20'8	82'4
'45.....	69'7	28'1	97'8
'55.....	96'3	29'0	125'3
'65.....	121'2	34'0	155'2
'75.....	170'2	42'7	212'9
'85.....	216'3	40'1	256'4

* "La France Economique," p. 440.

Allowing for a change in the method of valuing rural property in 1875, these figures show comparatively little progress since that time, apparently confirming M. de Foville's disposition not to swell the totals, but rather to diminish them since he made his estimate in 1878. In the United Kingdom there would equally have been little progress, as far as we can judge, apart from the increase of population. Thus in France, as in the United Kingdom, the progress in money values has not been so great since 1875 as before.

I do not propose to go into the subject of estimates of property in other countries. Students who desire to follow this subject will find references in M. de Foville's papers. The only other countries for which verifiable computations seem to have been made are Belgium and Italy. In the former case the estimate is that of M. Massalski, whose work I have not seen, but who has followed, apparently, the method of M. de Foville—the preferable method in a country which has data like those of France or Belgium or Italy—and who thus arrives at a total of about 1,200 millions (29½ milliards of francs)—a calculation so far supported by an estimate of 440 millions alone for the value of the real property, land, and houses, which is stated to have the authority of M. Malou, who valued in 1880 lands at 300 millions and houses at 136 millions.⁴ The total of 1,200 millions seems to compare closely with that above given for Scotland, which has a smaller population, but which is probably somewhat richer per head. With regard to Italy, we have the advantage of a very elaborate study by M. Pantaleoni, a most able Italian economist, who discusses fully the whole question of valuations of property in different countries in his work, entitled “*Dell' Ammontare Probabile della Ricchezza “privata in Italia,”*” published at Rome in 1884. Finally, M. Pantaleoni adopts the method of M. de Foville in calculating from the figures of the succession duty by means of a coefficient, though he supports the results by direct calculations as to the value of lands and houses. In this way he arrives at a total of 1,920 millions for Italy, composed approximately as follows:—⁵

	Mlns. stng.
	£
Land	1,160
Houses	360
Other property.....	400
	<hr/>
Total	1,920
	<hr/>

I should have thought, at first sight, that such figures were too small for Italy, whose population is three-fourths that of France, but whose wealth, according to this account, is something like two-sevenths only. It is not essential, however, for our present purpose to criticise minutely; M. Pantaleoni has certainly discussed the subject in a proper manner, and I could not go behind his data. That he considers it not improbable that the private wealth of Italians is much less than that of Frenchmen, is a fact of itself to be taken note of. The figures may not be very exact, but some

⁴ See de Foville: “*La France Economique*,” p. 446. I have not seen this calculation of M. Malou, but it is not improbable, as M. Malou has made a valuation of 320 millions for the year 1865 or thereabouts.

⁵ Pp. 221 *et seq.*

such difference, we may be sure, exists, much else that is known of the economic condition of Italy agreeing with the estimates.

Still, neither as to Belgium, nor Italy, do I wish to criticise in detail, especially in the absence of any figures as to the accumulation of capital which is our special topic. What I wish to point out is that, for those who care to follow up the subject, certain data are accessible in many countries which would assist in the compilation of useful figures, although the limit of error would necessarily be somewhat wide. The chief items everywhere must be land and houses, and in most cases now railways, the first being relatively more important in almost every other country than it is in England. Limits of the valuation in gross of other items, if land, houses, and railways can be valued, are always capable of being ascertained, even if no exact figure can be stated. But it is absolutely necessary for comparison that the process should be set out in full; that a valuation of capital, as much as possible, should be made on some calculation of income, and that such points as whether a community is a creditor or indebted in respect to other nations should be allowed for.

VII.—*The Use of National Valuations.*

In my former essay, and in the introduction to the present essay, the uses to which general valuations of the property of a community, and of the estimates of accumulation of capital derived from them, may be put are briefly indicated. After this long inquiry it may be useful to return to the topic, and explain in some measure how the statistics may be applied.

But first let it be understood, as it cannot be too frequently repeated, that the figures, which can be arrived at by any method, are necessarily not exact. A detailed valuation of each description of property is hardly possible, and would present many difficulties of its own, while it would be subject in any case to the observation that only by a violent hypothesis can the property of a community be valued like that of an individual member of it, seeing that it is not conceivable that it can all be the subject of a sale at a given moment. In actual fact, however, we have to be content with something that falls very far short of such a detailed valuation, and to apply average rates of value to gross quantities either of property or income which are themselves imperfectly ascertained. For certain purposes the results may be good enough, and I believe are good enough; but they are certainly not to be treated as sums in an account definitely ascertained, and compared one with another, without attention to the nature of the data themselves, and the similarity or dissimilarity of the processes by which the results are arrived at.

The uses to which the figures can properly be put, regard being always had to the fact that the data and methods employed are sufficiently alike for the special purpose in hand, appear to be the following:—

1. To measure the accumulation of capital in communities at intervals of some length—not less, perhaps, than ten years—this having been the main object in view in my essay in 1878 on the accumulation of capital, and being perhaps the most important use to which such figures can be put.

2. To compare the income of a community, where estimates of income exist, with its property.

3. To measure the burden of national debts upon different communities.

4. To measure, in conjunction with other factors, such as aggregate income, revenue, and population, the relative strength and resources of different communities.

5. To indicate generally the proportions of the different descriptions of property in a country to the total—how the wealth of a community is composed.

6. To measure the progress of a community from period to period, or the relative progress of two or more communities, in conjunction with the facts as to progress in income, population, and the like; to apply, in fact, historically and in conjunction with No. 1, the measures used under the above heads 2, 3, 4, and 5 for a comparison at a given moment.

7. To compare the aggregate accumulation in a community with that portion of the accumulation which can be described as free savings, and which is gradually invested through the agency of the stock exchange.

8. To throw light on the question of changes in the value of money, which are themselves among the facts to be investigated and allowed for in comparing the valuations of different countries, or the valuations of the same country at different times.

There are, no doubt, other uses to which the figures of national valuations, when judiciously used, can properly be put; but the above, it may be allowed, form a good enough list if it can be shown, as I think it can, that with all their inexactness the figures still supply useful materials for discussion. There is, of course, no reason why such figures should not be used if they are exact enough for the purpose, and if they are the best obtainable.

Valuations of property, therefore, and studies of the accumulation of capital, though the figures are necessarily rough, have their uses in various investigations. They make a little clear what would otherwise be most dark, and they suggest problems for inquiry which would not otherwise be thought of. The figures,

though rough, can be reasoned on safely with care. Better figures would be desirable, but in the absence of better figures it would be folly not to use what we have, and set our wits to work to use them properly.

I should be disappointed, however, if the discussions of the last few years do not lead in time to the production of better figures. As the practice of periodic valuations continues, light should be thrown on the value of the method and the way in which it can be used properly, while investigations could be made by means of the various property taxes and otherwise, which would throw light on some of the more difficult parts of the problem. If the Inland Revenue Department, for instance, were to inquire into the proportions of different kinds of property passing at death, and to publish the results, these proportions might become a check upon general valuations of property. The resemblances or differences in the proportions might suggest points for inquiry, and by arguing from the known to the unknown, useful corrections, at least, in minor details, could probably be obtained. The census might also be made use of, as it is in the United States, in order to obtain data for an independent valuation apart from the income tax returns. Were all this trouble taken, results would be arrived at which would be of the utmost value to the Government practically, as well as to economists in their discussions. The progress of revenue is intimately connected with the progress of national resources, and the progress of money revenue with the progress of the money expression of these resources. The resources themselves and the money values must be studied by Chancellors of the Exchequer with almost equal anxiety, and they should both, at any rate, be studied together. Periodical complete valuations of property are in this view as indispensable as the census of population itself.

APPENDIX.

I.—*Estimate of Annual Interest on English Capital Invested Abroad in Public Loans or Shares of Companies.*

(Compiled from "Investor's Monthly Manual," 31st May, 1886, and Banking Supplement to "Economist" for 22nd May, 1886.)

[000's omitted.]

	£	£
1. <i>Public Loans</i> in "Manual" List, exclusive of United States, French, Austrian, and Italian, only partially held here, and of Prussian, Dutch, and certain (recent) Russian loans, almost wholly held abroad	38,470	
Add estimate for proportion of United States, French $4\frac{1}{2}$ per cents, Austrian and Italian held here. Total interest = 37,267,000 <i>l.</i> , say one-tenth*	3,726	
		42,196
2. <i>Railways</i> —		
(a) United States, excepting shares and bonds of lines in default	13,906	
(b) Indian and Colonial	6,254	
(c) Foreign, 7,042 <i>l.</i> , less 1,168 <i>l.</i> , half of Lombardo- Venetian interest	5,874	
(d) Add—French railways 17,990 <i>l.</i> , say one-tenth held in England	1,799	
		27,843
3. <i>Dividends of Anglo-Foreign and Colonial</i> —		
(a) Banks		3,656
(b) Canal companies†	314	
(c) City loans	964	
(d) Gas and waterworks	1,093	
(e) Coal, iron, and steel companies	120	
(f) Land, financial, and investment companies	1,328	
(g) Tea companies	71	
(h) Other „	1,293	
(i) Mines	500	
		5,683
4. Capital investment of English insurance companies doing business abroad, say 11,000,000 <i>l.</i> at 6 per cent.		660
5. Deposits of Anglo-Foreign and Colonial banks, = 176,000,000 <i>l.</i> "Economist," at say 3 per cent.		5,280
Total		85,318

* In 1878 this item was estimated at one-fifth, but apparently since that time the English holding of these particular securities would seem to have been diminished in proportion.

† Exclusive of Suez Canal Shares.

II.—Summary of List of Public Issues of Loans and Undertakings on Account of Foreign Countries in the Years 1876-85 inclusive, as Published in Statistical Society's Journal, June, 1882, pp. 271 et seq., and to be continued in the Statistical Society's Journal for 1890.

[In thousands of pounds, 000's omitted.]

	1876.	1877.	1878.	1879.	1880.	1881.	1882.	1883.	1884.	1885.
	£	£	£	£	£	£	£	£	£	£
Colonial Government loans	16,240	7,370	11,451	18,934	12,982	11,168	9,177	24,097	23,937	23,530
Municipal loans	681	974	792	1,538	1,368	100	641	1,512	1,832	2,295
Foreign Government loans.....	3,479	6,272	10,730	—	859	6,471	10,088	7,601	10,329	7,265
Railway issues	5,242	4,164	2,931	2,626	14,671	26,302	25,260	15,554	12,754	18,584
Miscellaneous companies	25,642	18,780	25,904	23,098	29,880	44,041	45,166	48,764	48,852	51,674
Mining companies.	—	1,700	755	4,040	3,990	13,542	17,122	15,028	12,267	3,582
	—	—	—	—	7,051	11,082	2,643	2,500	3,852	2,252

DISCUSSION *on* MR. GIFFEN'S PAPER.

MR. F. HENDRIKS, Vice-President, said that at first sight the figures of the steady growth of national wealth which Mr. Giffen had quoted, amounting to 1,489 millions in the ten years from 1875 to 1885, were very dazzling; but on consideration it appeared to him that the glamour of the thing very much disappeared when it was viewed in conjunction with other factors which influenced the growth of wealth. The increase mentioned was $17\frac{1}{2}$ per cent. If that was reduced to a geometrical ratio of compound interest for the ten years, it meant a growth of capital at the rate of about $1\frac{3}{8}$, or say *1l. 7s. 6d.* per cent. per annum, upon the total; but they must recollect that this must be viewed in its relation to the increase of the population in the same period. Now it was tolerably certain that this increase in the population of the United Kingdom must have been between 11 and 12 per cent. in the same ten years, 1875-85. This again was a geometric ratio of increase of about 1 per cent. per annum. There was not therefore any great divergence between the two factors. By a very easy process Mr. Giffen's figures might be almost toned down, *per saltum*, to an absolute equality with the growth of the population. In some items he had changed the system of his former valuation of certain securities. Mr. Giffen, on the last occasion of his reading a paper to this Society on the same subject, valued public companies' securities at fifteen years' purchase. Now he had valued them at twenty years' purchase. Perhaps this increase was justified by the exceptionally high prices which prevailed at the present moment; but these stock exchange prices must be very ephemeral, and personally he (Mr. Hendriks) would prefer the fifteen years' purchase in the capitalisation, considering that some of the companies included in the general mass were very shaky concerns, and that some of them indeed paid dividends out of capital. Again, Mr. Giffen valued the large item of the income of railways in the United Kingdom at three years' purchase more than he did on the last occasion. Here again the sum set down in his capitalisation was very transitory and uncertain. There were circumstances ahead, such as the labour question, the prices of materials, and the Government regulation of railway rates, which might materially alter the values. A very large item in this very speculative but, it must be confessed, interesting estimate, consisted of variable stock exchange securities, the gross value of which might be brought down by the least sign of disaster in the political horizon, and for which a very much lower number of years' purchases would then have to be taken. He himself thought that even at the present time it was more consistent with prudence to capitalise what might be termed the miscellaneous stock exchange securities at fifteen years' purchase instead of twenty, and the railway securities at twenty five years' purchase instead of twenty-eight. This would

show that the $17\frac{1}{2}$ per cent. increase assumed by Mr. Giffen might be very easily reduced to 14 per cent. It was useless to compare the growth of the national wealth in the United Kingdom with that of countries like America, Australia, or even South Africa and India, where there was boundless territory and therefore great room for expansion, so that the circumstances were different. Without venturing to lay down any hard and fast law like Malthus had done, in regarding it as an axiom that the increase of population is in a geometric ratio, and the increase of the means of subsistence in an arithmetical ratio, he was inclined to believe that there was some limit in the case of old settled countries like the United Kingdom, which caused the growth of national wealth to be limited in the long run to much the same geometric ratio as controlled the increase in the population, so as to lead to no very great divergence in decennial periods of time in the average wealth per head of the community. He was quite prepared for some gentlemen to call him a deteriorationist. To this he would reply that he was neither an optimist nor a pessimist. Mr. Giffen consoled them with the notion that because the prices of commodities had fallen, therefore the increase in the national wealth in 1875-85 represented so much more than it otherwise would have done. Now this might be true for the moment, but this again was very transitory and illusory. The increase which was daily going on in the rate of wages, and the conditions of competition which caused a decline in the profits of producers, might soon cause rises of price in every direction. Neither were the reductions in the wholesale prices of commodities in the decennial period under review at all the measure of the advantage which the general mass of consumers derived from the fall in prices. Some advantages therefrom might be derived by the middleman and by the workman, but there was not an all round advantage in the retail prices charged to the consumer, or at any rate it could not be expressed quite in the terms which Mr. Giffen had used when he alluded to the drop in prices of commodities, added to the increase in our wealth in 1875 to 1885, having together amounted to the large increase of 40 per cent. This was about tantamount to doubling the national wealth in a period of twenty years, but it was quite open to gentlemen to differ upon that point, and to consider the ratio of increase as too great. He did not mention these objections for the purpose of in any way derogating from the indebtedness which they must all feel to Mr. Giffen for his admirable paper, and he felt sure that there would be a consent of general opinion in favour of thanking him for the light he had thrown in his essay upon a most difficult, and at the same time most interesting branch of political arithmetic.

Mr. F. B. GARNETT, C.B., said that he should not have presumed to take part in the discussion, had it not been for the fact that the paper was mainly founded upon the statistics of the Inland Revenue Department, and that he happened to have a special familiarity with those statistics. It would be more convenient in any publication if Mr. Giffen were to mention the years

according to the way in which they are reckoned financially. The years 1865, 1875, and 1885 are really intended for the years 1864-65, 1874-75, and 1884-85, for which years the figures of the income tax assessments are taken. Moreover, the assessments for each year are necessarily based upon the incomes of the year before, and in some cases the difference of a year would make a very material difference in the result. In the estimate of the value of houses, Mr. Giffen did not make allowance for the different bases of value in England, and Scotland, and in Ireland respectively—but the United Kingdom is taken as a whole. The gross estimated rental of property in the income tax assessments for 1884 was 213 millions, and the value of property not assessed to income tax was no less than 29 millions, which was distributable between England, Scotland, and Ireland in different proportions. If this 29 millions consisted wholly of houses, the capital value at fifteen years' purchase would amount to 435 millions of property, which Mr. Giffen had apparently left out of his estimate. [Mr. Giffen said that that was not the case. There was not the slightest reason to suppose that the 29 millions were houses at all, or that they would not be dealt with in some other part of the income tax returns, or in the non-income tax part of his own paper.] As regards the item of farmers' profits, Schedule B, Mr. Giffen had taken the income at 65 millions to be substantially the same as that for lands under Schedule A. Those were the figures entered in the income tax assessment for each year, but the fact is that the value of land under Schedule A is entered in the assessments as the basis of computation of the Schedule B entries, and the income or profits were required to be estimated at one-half the full value in England, and at one-third the full value in Scotland and Ireland. If the computation were worked out on that basis, and estimated at the same number of years' purchase, the total value would be 236 millions instead of 521 millions which Mr. Giffen had given. This was a very material difference indeed. [Mr. Giffen said that he must interpose at this point. A great deal was being made out of nothing. He was quite aware of the point with regard to Schedule B, and it had been discussed before. He did not agree with Mr. Garnett's statement of the law for estimating profits under Schedule B, but in any case whatever might be the figure of profits, the multiplier to be applied so as to arrive at a capital sum should be such as to give an approximately appropriate capital sum. It would be absurd in such a matter to take any figure which the law might happen to say were the profits, and then apply so many years' purchase of the profits arrived at by quite an independent calculation of the usual rate of profit upon capital in the business. Regard must be had to the capital sum to be arrived at. Mr. Garnett did not seem to be aware that the point had been often discussed.] He would proceed to another schedule. As Mr. Giffen had remarked, opinions might differ as to the inclusion of the public debt under Schedule C. It had been stated on authority that no schedule less correctly represented the income of the country for any year than Schedule C, which was necessarily confined to the amount of payments to persons who were liable, actually made

within each year. Small dividends were excluded, so also were those belonging to charities and all savings banks investments. If the payments of dividends were deferred from any cause, they tended to increase one year to the detriment of another. His own opinion was that the public debt should not be excluded, for it seemed to him that national credit might be regarded equivalent to national capital. The difficulty of arriving at a proper valuation of this kind was manifest, and where the figures dealt with were so enormous, it was not surprising that there should be differences of opinion in details. This was not a subject which he was now considering for the first time. In the year 1877 it happened that he (Mr. Garnett) by the desire of His Royal Highness the Commander-in-Chief, had been requested to furnish an estimate of the then capital value of the United Kingdom for the information of the National Defence Committee. His estimate at that time was 10,000 millions, based upon the same figures which Mr. Giffen had taken in the following year. This value was considerably in excess of the estimate made by Mr. Dudley Baxter, and somewhat in excess of that of Mr. Giffen. His impression was, that if he were now called upon to make an estimate in detail, he should again arrive at a larger figure than Mr. Giffen had given. He was glad to think that it would be so, for he did not see any reason for underestimating the national resources. They must all feel that Mr. Giffen's paper had enlightened them very much on many points with regard to the mode of dealing with this intricate subject.

Professor H. S. FOXWELL said that in common with everyone he must confess himself very much indebted to Mr. Giffen for his suggestive paper. He wished to deal with two or three matters of principle which had occurred to him in the course of the paper. In the first place it appeared doubtful whether, in estimating aggregates of national capital from one period to another, the number of years' purchase should be altered. The substantial fact with which they had to deal was actually income. He presumed that the object of the decennial stock-taking was to ascertain whether they could look with any complacency upon the social system which produced the results which the figures showed. Now they could not congratulate themselves upon an increase of capital amount, which was due simply to an alteration in the rate of capitalisation. The alteration might affect the market price of the property as between individuals, but it did not represent any real increase in the value of its property to the nation as a whole, the nation having no idea of parting with its property to another nation, and, even if it had, the rate of capitalisation would not affect the bargain. With regard to Ireland, Mr. Giffen had argued that tenant right ought not to be included in the valuation. But it appeared to him (Professor Foxwell), that the legislation which reduced rents, did so to a large extent by transferring a certain proportion of the actual capital from the hands of the landlord to the hands of the tenant, and in the hands of the tenant this capital assumed the form of tenant right. He could not

understand that the national capital was directly diminished by this legislative transfer, though it might have been diminished indirectly by the effect of this policy on confidence and security. It was an incidental point in Mr. Giffen's paper, but he wished, as a matter of principle, to protest against the valuation of tenants' profits at half the rent. He could not see any reason to suppose that a farmer who paid five times the rent per acre which another man paid was necessarily making five times the profit. In theory, at all events, an opposite assumption was made. Rent was supposed to be a differential payment equalising profits, not proportional to profits: so far at least as the rate per acre was concerned. Hence he did not think that the basis of rental was a fair one upon which to estimate profit. As to the question whether the public debt should be included, they ought to make up their minds one way or the other. He ventured to think that it ought not to be included. Otherwise, they would arrive at this astounding result, that if the Government were to purchase the railways of the United Kingdom, the national debt would be increased by 950 millions odd, and they would also have under the item of "national property" 950 millions of railway capital; so that the effect of reckoning debt as capital would be that in consequence of a change of administration which had made no change in the real value of the national assets, these assets would appear in the estimate as having increased by 950 millions. It appeared to him that it would be very valuable if an inventory of the national assets was made out. Mr. Giffen did not include in his estimate of national property any property which paid income tax; but he (Professor Foxwell) thought that a great deal of that property was essentially public property, held in trust for public uses by corporations, trustees, or otherwise. It would be desirable for many social purposes to have some estimate, including all property which was practically devoted to public uses. Mr. Giffen had suggested at the close of his paper, that the results of an inquiry into the amount of national capital might be used as a test of the movement of prices. But to use it in this way with certainty and effect, they ought to have quantitative estimates of the growth of capital based on such returns as they had in the United States. Otherwise it appeared to him that the argument was in danger of becoming circular, though Mr. Giffen evaded this difficulty by assuming that the rate of production and the rate of increase of population were the same during the period. But had they a right to assume that? They had no basis for assuming the constancy of the increase of production so far as he knew. It would appear from the paper that the effect of the fall of prices had been to depress national production. It was true that, after correction for the estimated fall of prices in the decade 1875-85, Mr. Giffen made the accumulation of capital not much inferior to that of the decade 1865-75. But there could be little doubt that this accumulation had been more painfully made. The depression of trade had imposed on all classes an extra degree of thrift and self-sacrifice. Even so, it appeared that although population had increased, the rate of national accumulation, rapidly increasing up to 1875, had now

ceased to increase. This was one of the most salient and sombre results of Mr. Giffen's inquiry, and brought out very clearly the depressing effect of a continued fall of prices.

Mr. J. STEPHEN JEANS said that he thought that Mr. Giffen had somewhat underestimated the capital which the country possessed in the form of mines and ironworks. The capitalisation of the ironworks was put down at 7,969,000*l.* for England. He was disposed to think that four years' purchase was scarcely sufficient for property of that description. Those works producing pig iron would run for ten or twelve years as far as the furnaces were concerned; and steel works would run for a still longer period. He had made a rough calculation of the capitalised value of the ironworks in the United Kingdom, and he made it something like 14,900,000*l.* That was a great advance upon Mr. Giffen's figure. As to coal mines, very good authorities had estimated that the amount of capital invested in them would not be less than 80 millions sterling. The income assessed to income tax for the last few years did not afford any correct idea of what the capital invested in mines really was, inasmuch as the profits had run very low. He believed that the capitalised value of the coal mines in England and Wales alone would be more like 60 millions than 26½ millions. He thought also that the capitalised value of 463 millions which Mr. Giffen had given for trades and professions, taken at fifteen years' purchase, was rather under the mark. That figure was supposed to embrace nearly all the great industries of the country, except quarries, mines, and ironworks. The amount, on the face of it, seemed too small. The present tonnage of the shipping on the register was 8 millions. If that was taken at only 10*l.* a ton, which was very low, it would represent 80 millions for shipping alone. It was very satisfactory to think that Mr. Giffen had rather underestimated than over estimated our national resources.

Sir R. W. RAWSON, referring to the remarks of Mr. Jeans, requested that future speakers would bear in mind that Mr. Giffen's calculations were only brought up to the end of the year 1885, since which year there had been given to production and prices a stimulus which did not come into the calculation. He should like to make an observation with regard to the question of tenant right in connection with the valuation of rental lately alluded to. He happened to be an Irish landlord on a very small scale, and he had a farm for which his forefathers up to fifty or sixty years ago were receiving 500*l.* a year rent, and for which he had received up to two years ago 400*l.*; but for the future he had the prospect of receiving only 260*l.* The farm was not less valuable than it was, but he got so much less rent, and the tenant got so much more pocket money.

Mr. S. BOURNE said that he would only allude to two or three points which appeared on the surface, for it was impossible to criticise it in so short a notice. He presumed that the tables

which Mr. Giffen had brought forward under Schedules A and B, and so on, represented the actual amount of income subjected to income tax. If so, they could scarcely question the figures. The figures given with regard to land seemed very extraordinary, and scarcely comported with what must be within the knowledge of everybody as to the deterioration of the income derived from landed property.

Mr. Giffen said that in 1875 they did not get the maximum value, and since 1885 there had been a still lower minimum than he had given.

Mr. S. Bourne said that he thought that there must be some difference in the valuation or in the nature of the returns, for the income from landed property to be comparatively stationary for the last twenty years.

Mr. Giffen: It was not stationary. In 1875 it went to a higher figure. In 1885 it had gone to a lower figure than in 1875.

Mr. S. Bourne said that the matter was one which deserved inquiry. The income from houses was stated to be 79 millions in 1865; then it jumped to 94 millions in 1875; and it further jumped to 128 millions in 1885. This seemed to be inconsistent with what those persons who had the misfortune to be the owners of house property experienced. There had been a very vast deterioration in rentals. He thought that the difference must be accounted for by some difference in the nature of the returns. The reduction of rents during the last ten years had been in some cases 30 per cent.

Major CRAIGIE said that he had himself attempted in a very rough way some examination of the very large field of inquiry so comprehensively dealt with in the paper. The conclusion that he had reluctantly arrived at was, that they did not as yet possess in the income tax data, or in any published data, as far as he was aware, the full materials upon which a sufficiently reliable computation of existing capital could be made. No general criticism of such a mass of statistical conclusions as Mr. Giffen now laid before them was possible without an adjournment for consideration. But in an assembly like that there were always persons who were familiar with particular businesses, and who could show that the particulars put forward in the paper with regard to the capital employed in the trades of which they had knowledge did not accord with their views and experience. He would suggest to his friend Mr. Garnett, who had spoken in defence of the income tax tables, that much as they appreciated the detail which was given, those of them who were omnivorous statisticians wanted to know a little more yet of the distinctive sources of income than was published. The want of power to analyse in detail the figures made them hesitate about the number of years' purchase adopted for capitalisation. For instance, the first item "lands" he should like to see broken up into its different elements. The word "houses" again was used for various things which were quite unlike one another. With regard to "farmers' profits" he could not accept Mr. Giffen's

method of treating Schedule B. It was unfortunate that in our income tax valuations two principles of assessment were followed, one which was at least assumed to represent income, and another something quite different from income, namely, rent. He understood Mr. Giffen to say that the farmers' profits if estimated at the amount which the law stated, would give far too small a figure.

Mr. Giffen said that he did not say that. He had nothing to do with the figure which was given. He merely said that to arrive at the capital amount they must apply a proper multiplier. He would take any figure of profits which Major Craigie liked to give him.

Major Craigie said that he preferred to take a larger number of years' purchase of the legal income. But even then he had never been able to reach the capital figure placed against the farm stock of the country in these estimates. He must beg to demur now as in 1878 to that capital figure. He could not see where this capital existed on the farms of the country. He had seen attempts to justify this high value which took account not only of the whole capital of the farmer, or what would be called the capital in other trades, but also of the whole produce of a given year, which seemed impossible. He did not however wish to renew now the old fight on this point which his friend Mr. Giffen desired not to re-open on this occasion, but only to put on record that his opinion was the same as before. As to another question that of the public debt, he should like to hear in this Society a very definite expression of opinion. Mr. Giffen had blown his trumpet with a somewhat uncertain sound as to that matter, and opposite views had been expressed that evening. He knew that there was a great deal of difficulty in deciding the matter one way or the other, but personally he was disposed to regard consols as property. There was another point nearly at the bottom of the Table A, namely, the valuation of moveable property which was not yielding income, such as the furniture of houses, works of art, jewellery, and so forth. Would that really work out to anything like the figure which was placed against it? Speaking from memory, he believed that on the last occasion something like one half of the value of houses was taken as representing their contents. He believed that the same was done on the present occasion. If that was so, looking at the way in which houses were divided, and the immense variety of structures included, he could not help thinking that one half of their value was rather too high. He would like to ask if the inland revenue authorities could not help in deciding the question by analysing the property valued for probate?

Mr. BENJAMIN KIDD said that he did not think that the criticisms of Mr. Giffen's figures which they had listened to touched any important principle, because they had to deal merely with a comparison between two years, 1875 and 1885. The important point was that the basis of comparison should be the same for both those years. But was it? He should like to ask Mr. Giffen whether, in comparing the national capital at the two different periods, it

would not have been better to have taken the averages of the income tax returns for periods of ten years ending 1875 and 1885, and to have made his calculations on these, instead of on the returns of two separate years taken in somewhat haphazard fashion.

The CHAIRMAN (Mr. Goschen) said that he believed that it was customary for the chairman of the day to say a few words on the conversation which had taken place. He was sure that Mr. Giffen would not be vexed, discouraged, or disappointed in the slightest degree at there having been some criticism on the details of his very valuable paper. He would hope that he would receive the general expression of opinion that he had rendered great service to statistical study by the very learned and thorough attention which he had given to the points which he had illustrated in his paper; but on the other hand it was beyond controversy that the paper bristled with subjects which must be open to remark, and that all the calculations which he made were open to criticism in detail. Indeed he thought Mr. Giffen himself would not contend that he would rest his paper on the conclusions to be derived from any particular item in his calculations, but would agree that they must look to the general results of his paper. He thought that no part of it was more valuable than the historic part, where Mr. Giffen had brought out in very bold relief the general progress which had been made, and as well as the changes in the proportionate values between land and houses. There Mr. Giffen seemed to be on comparatively safe ground. With reference to a remark by Mr. Hendriks he (Mr. Goschen) did not think that Mr. Giffen had intended to convey that the progress between 1875 and 1885 was in any degree remarkable or phenomenal. He himself believed that the paper was rather in a different direction. It brought home to his (the speaker's) mind, and he was not sure that that was not the impression which Mr. Giffen wished to convey, that the progress on the whole had been a slower, a retarded progress compared with that made at other times of our economic history. It did not appear to him (Mr. Goschen), though there had been prosperity in the last ten years, that we could in any degree congratulate ourselves upon having arrived at any greater speed in attaining larger dimensions of prosperity than we were able to attain in previous decades in our history. On the other hand, he must entirely demur to the statement of another gentleman, who suggested that we had reached the limits of our national wealth and our national prosperity. One would think from some of the remarks that had been made that the income tax had been imposed not only for the purpose of deriving revenue, but also for the purpose of benefiting the student of statistical history. He thought that some remarks on detail had been made which were not entirely just to the figures quoted by Mr. Giffen. One gentleman had remarked that the value of house property had fallen 30 per cent. during a certain period; he (Mr. Goschen) did not know what period. All he could say was that as an inhabitant of a house he had not found that its value had diminished by 1*l*. during the time

he had occupied it; nor had he found that the rates which he paid had in the slightest degree been decreased. He had no doubt that there were a great many ratepayers present, and they would be able to state whether they had found that their rates, or rather not the rates, but the valuations on which they paid their rates, had been diminished. The returns from which Mr. Giffen had drawn his inferences in this respect were returns which were mainly based on official valuations, and so far they were absolutely correct. These were not speculative figures; they did not at all enter into the romance of statistics. He was bound to say that in the capitalisation of income a certain amount of romance could not be excluded, but as regards the value of houses they had the actual prose of the amount of the poor law valuations on which they all paid their rates; and as a matter of fact and history the rateable value of houses, in its broadest sense, had increased to the degree which was doubted by Mr. Bourne to be correct. But dealing with a broader question, he thought that all present must see how every statistician seemed able to establish a system of his own in capitalising the income of the country. He (Mr. Goschen) had not been able to attend the meetings of the Statistical Society very frequently, and therefore he was not quite aware of the general view which had hitherto prevailed, what he might call the orthodox view, as to the capitalisation of income; but he was bound to say, though he liked to see the results and the interesting comparisons which Mr. Giffen had been able to draw between the condition of the United States, France, and England, and England and Scotland respectively, and so forth, that for any decided distinct practical purpose, for legislation for instance, the capitalisation of income would not afford a sure and firm basis for action, and that it appeared to him to be a matter where controversy could be brought to bear on almost every figure. In fact everyone might agree as to the capitalisation in every other trade or interest except that of which he had personal experience himself. He must say as to the capitalisation of houses that though the valuation was accurate, yet the term of years one would take was a matter of difficulty, and it was difficult to say what was the capital value of houses in any particular country. If through any political causes the value of house property declined, they would find that what was assumed to be a national resource might be seriously diminished at one blow. So, he thought, one might run through a great many of the items, and find that as regarded a particular source of income the system of capitalisation was a dangerous system. He would attach on the whole more value to that part of the paper which Mr. Giffen had brought out with equal power and with equal judgment, namely, the increase of the *income* of the nation. That seemed to him (Mr. Goschen) to be a fairer method of calculating our resources and our wealth than the attempt, fascinating as it was, to put it in the form of capital. It might be expected that he should give his opinion, though he would do so with deference, respecting that most serious question as to the inclusion of the national debt as part of the capital of the nation. To his mind, after listening to the discussion that evening, and remembering what he had read, it depended

on the circumstances for which they were estimating the capital. If they looked on it as simply what people possessed, it might be right to include the national debt, as a great number of people possessed consols; but when they came to estimate, as Mr. Giffen had done, the resources of the country, he (Mr. Goschen) must demur to including in the value of the "going concern" that which was in many respects a liability more than an asset. In the same way they could not include mortgages unless they deducted from the value of the land. He would be most reluctant to lay down the law in any way upon the matter, but his own judgment was that in summing up the resources of the country and calculating what its wealth was, they ought not to include the national debt. One of the speakers had pointed out that if the national debt was included, they would have the paradox that the increase of the debt would appear to be an increase in the national assets. He felt that it was utterly impossible to deal fully and adequately with so vast a subject as that which Mr. Giffen had laid before them. While they might disagree with certain of Mr. Giffen's conclusions, they must recognise that he had rendered a service to statistical science by the labour which he had bestowed upon his task.

Mr. Giffen briefly replied.

Since the meeting Mr. Giffen has supplied the following memorandum bearing on the discussion:—

It was impossible for me at the late hour at which the above discussion closed, to go into the various questions which had been raised. In any case, I thought it unnecessary to do so, as I agreed generally with Mr. Goschen's remarks as to the limits of the usefulness of figures as to the growth of capital. They are not intended to assist in the practical work of legislation, but to throw light on social and other problems which it is difficult to treat properly, owing to the lack of sufficient statistical data, yet problems which are so important, in many ways, that if they can be illustrated statistically at all, we are bound to make the best of such data as may be available. There is no hope of improvement in the statistical data themselves unless attempts at discussion are made.

The general defence of such attempts at capitalisation is, that income, and income expressed in money, is only one mode of viewing the wealth of the community. In the business of life, capital, as well as income, is dealt with, and unless wealth is viewed from the point of view of capital, we do not see all the facts. An old community, where the rate of interest is low, may, for instance, have only the same income as a new community where the rate of interest is high, but its economic power may be very much greater, because the same income in the world's investment market exchanges for a greater capital sum than the income of the new community. One community also may have wealth which

yields no income at all in much greater degree than another community, and although it yields no income, such wealth is by no means to be disregarded in a comparison of the resources of the two communities.

That the data ought to be discussed is, however, hardly open to question among statisticians. As the "Historical Retrospect," constituting the fifth chapter of the book on "The Growth of Capital," shows, these studies on capital have been prosecuted at different times by statisticians of the greatest eminence; and especially at times when circumstances were such as to excite interest in questions as to the resources of the country. When "national debts" get to be large, the question of the aggregate wealth, and not merely the aggregate income of the nation, becomes of obvious importance. I may quote, however, in addition, the following passage from a paper by Mr. Jacob, the well-known author of "A History of the Precious Metals," and one of the founders of the Statistical Society, which I extract from one of the earliest volumes of proceedings of the Society:—

"Few results are more desirable to arrive at, than some valuation which could be relied on of the wealth, personal and real, of the kingdom. It will be obvious that this idea has been constantly in the view of the writer whilst drawing up these remarks. The effect of it would then be, that a comparison might be made between the amount so arrived at, and the amount of the national debt, which is indeed but a charge on the whole property of the community, including the funds themselves, in favour of a part of the same community. It is not certain that, by any or all of the accounts here suggested, such a desirable result as an exact statement of wealth could with perfect accuracy be arrived at; but such an approximation might be obtained, by much reflection and labour, as would be of a consolatory and tranquillising tendency."¹

There could not be better evidence, I think, that the most eminent statisticians have attached great importance to such studies. There are necessarily great imperfections in the data, but it does not follow that the data should be altogether neglected. On the contrary, we should make the best of them, and see that only such conclusions are arrived at as the most careful handling of the data would justify.

To this general view I have little more to add. It will be obvious to those who read the discussion, that none of the points touched on by any of the speakers, except perhaps Mr. Hendriks, affected the method or conclusions of the paper. Whether "mines" or "agricultural capital," upon which so much was said, are overvalued or not—and I maintain there is no real undervaluation or overvaluation—still the general conclusions of the paper are not in the slightest degree affected. With regard also to the observations of Mr. Hendriks, they refer to matters on which difference of judgment may well exist, and I am quite content to leave the matter upon what he has said in comparison with my own remarks. A good many of his statements were anticipated beforehand in

¹ Observations on the Collection of Statistical Knowledge, by Mr. Wm. Jacob, F.R.S. Transactions of the Statistical Society, vol. i, part 1, p. 25.

the book which was not before him, as well as in the paper which was before him.

With regard to specific points, apart from the main drift of the paper, it is perhaps unnecessary to say anything, as they are so trifling; but it may be convenient not to pass them over altogether. The gist of what is to be said is that most of the criticisms were made in ignorance of what is in the paper itself, or in the paper of 1878 which it continues.

1. This last remark applies especially to the observation of Mr. Kidd, who questioned whether 1875 or 1885 could be properly compared, the former being a year of prosperity, and the latter of depression. This point, however, was explicitly discussed, and reasons given for the belief that the years 1865, 1875, and 1885 were of much the same character, belonging to or immediately succeeding years of inflation, and in any case separated by an interval of ten years. The suggestion to compare ten years' averages instead of particular years, might be useful if one were reasoning to fine conclusions upon such figures, but as no such fine reasoning is intended, the obvious answer to Mr. Kidd is that the game would not be worth the candle. There are no conclusions to be derived from the averages that cannot be derived with sufficient trustworthiness for all practical purposes from the comparison for single years.

2. Mr. Garnett's criticisms were mostly answered at the time. It was unfortunate that he seemed quite ignorant of the discussion that had already taken place on Schedule B, as otherwise he would have known that the presumption of law as to farmers' profits being a half or any other proportion of the amount assessed on agricultural land under Schedule A, gives no better guide as to what those profits are than the rental itself. The one is just as good as the other; and in taking the assessment, and applying to it a number of years' purchase likely to give an approximate sum for the capital corresponding to the other figures in the table, I have followed a method likely to yield a useful result, just as if I had reduced the profits and applied a larger number of years' purchase as Major Craigie suggests. As the point has been raised, however, I may notice that the presumption of law amounts to nothing. It has not always been the same, and it is not based in any way on knowledge on the part of those who make the law as to what farmers' profits are. The "income" of farmers, certainly, whatever may be thought of what is technically called profits, must be greater than what the law presumes, as, for instance, anyone may see who compares "Schedule B" in Ireland with the number of occupiers in that country.

Mr. Garnett was also unfortunate, I think, in his reference to the difference between the gross estimated rental of the country and the amount assessed to income tax under Schedule A—a difference, he suggested, of 29 millions. If, he said, the difference was made up largely of "houses," then there was a great hiatus, amounting to nearly 450 millions in the estimates of the capital of the country, in my paper. I was not quite sure of Mr. Garnett's meaning at the time, nor am I quite sure still, but his remarks, as far as I

understand them, either constitute an attack on the figures of the Inland Revenue Department itself, for which he assumed to speak, or they show, apparently, some misapprehension as to gross rental and rateable value. So far as the value of houses is concerned, the Income Tax Department gives two returns. There is the return under Schedule A, and there is the assessment to inhabited house duty. The two returns substantially agree, and they profess to cover all houses, with some unimportant variations between them. If they do not, and there are "other" houses, the Inland Revenue Department publishes strangely misleading figures. I am unwilling, however, to impale Mr. Garnett on this horn of the dilemma. The 29 millions he refers to is apparently the difference between the gross estimated rental of all *rateable* property, and the annual value of such property; but surely "rateable property," and "property under Schedule A," do not cover exactly the same ground, and much more than lands and houses are included under rateable property. The difference of 29 millions may thus exist, and yet the income tax returns may be correct, so that any one following them may account for all the income and property of the country. Mr. Garnett's apparent assumption that rateable property not assessed to the income tax under Schedule A is not assessed anywhere to the income tax, does not seem well-founded.

3. Major Craigie, without going into details, repeats his opinion as to agricultural property being overvalued; but on this head I can only refer readers to the book, in which the point is fully discussed.

4. I may also refer Mr. Jeans to the book, in which, by anticipation, I had discussed all his points as to mining capital. I should have no objection to accepting his corrections, as they would not affect any of my conclusions, but I am not satisfied of their correctness. He was well answered, however, by Sir Rawson Rawson, and I need do nothing more than refer to the book.

5. As to the question of whether the amount of the national debt should be added to, or excluded from, such valuations, I need add nothing to what is said in my book. The point is interesting in many ways, but for practical purposes the important thing is to see, when two valuations are compared, that the point is dealt with the same way in both: in *what* way is of less consequence. I believe, however, that the practice of excluding the debt which I have followed is the more convenient.

R. G.

POPULAR EDUCATION *in ENGLAND and WALES since 1882.**By ROWLAND HAMILTON, ESQ.*

[Read before the Royal Statistical Society, 21st January, 1890.
FREDERICK HENDRIKS, Esq., F.I.A., a Vice-President, in the Chair.]

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IN May, 1883, I had the honour of reading to the Society a paper on "Popular Education in England and Wales, before and after the "Elementary Education Act of 1870." The necessity for a national effort had at length been admitted, which should embrace and organise the various and conflicting agencies by means of which the work of primary education, as then understood, had previously been carried on, while extending the means employed to a degree commensurate with the magnitude of the duties then formally recognised and assumed.

In order to render intelligible the nature of these agencies, and the conditions under which they had arisen, it seemed to me desirable to pass briefly in review the many various stages through which this great question had passed since the early part of the century. I had to notice the dread of the extension of even the first rudiments of knowledge to "the lower orders" on the one hand, the sanguine hopes of achieving great results by wholly inadequate means on the other; the experiences painfully gained

by the heroic efforts of those who first grappled in earnest with the practical difficulties of the problem; the early work of Raikes of Lancaster, and of Bell; the educational provisions of successive Factory Acts; the insight gained by schools formed under the Poor Law Board, and by the administration of the grant-in-aid, especially since the formation of the Education Department in 1856, all led up to the framing and passing of the Act of 1870.

The progress made under this and subsequent Acts (including that of 1876, which in some respects essentially modified its provisions), though by no means ideally perfect, justified to a large extent the expectations formed of its adequacy. Under the pressure of its requirements, a large number of schools were established, which satisfied the conditions laid down by the Education Department, and received a grant-in-aid for efficiency, tested by H.M.'s Inspectors. The number of these schools in 1872 was 9,854, having on their registers 1,969,000, of which 1,336,000 were in average attendance; while in 1882 the number of schools was 18,289, with 4,190,000 on the registers, and 3,015,000 in average attendance; an increase of $85\frac{1}{2}$ per cent. in schools, $112\frac{1}{2}$ per cent. in the number on the registers, $125\frac{1}{2}$ per cent. on those in average attendance; the population meantime having increased about 13 to $13\frac{1}{2}$ per cent.

I will not enter further into particulars which were given in my paper in 1883, but as this increase will be brought into comparison with that shown in 1888, some further notice is called for of the conditions under which it was made. A great stimulus had been given to the supply of public elementary schools by the discussions and inquiries which preceded and foreshadowed the passing of the Act of 1870. The demand for grants-in-aid of building schools had been availed of to a large extent, and though these were discontinued under the new Act, payments under arrangements previously sanctioned continued for some time, indeed, the account apparently was not closed till 1883. Further, the insufficiency of many existing schools was finally demonstrated by the detailed inquiries made in 1871 and 1872, and such palpable makeshifts could no longer be accepted as satisfying the requirements of the country. The advantages afforded by accepting the grant-in-aid under the conditions offered by the Department were too obvious to be neglected.

2. Speaking broadly, therefore, the Act of 1870 had exercised a marked influence by anticipation, and, further, the increase at this early period represents not only the supply of new schools in districts previously destitute, but also the supersession of many schools of a very low type by others of much greater promise, working under far more favourable conditions. The records of

school supply, as a whole were so imperfect, that those of 1873 were taken as the first practical starting point by which the working of the new system could in some degree be measured. Dating from 1870, the numerical gain would be still larger than that shown by the figures just given. Bearing in mind the difficulties which beset the first introduction of the new system, we may well admit that much good work was done in that period. It was no small gain to have given to parents some tradition (such as those in Scotland already possessed) of the value of schools, and to get children to come to them at all. But the time had arrived when the work developed under such conditions should be subjected to investigations of a more critical and searching character.

The Royal Commissions, of which Lord Cross was chairman, were the outcome of this conviction. First constituted in January, 1886, to inquire into the Elementary Education Acts of England and Wales, they accumulated a vast amount of evidence from many various sources, and finally presented a "Majority" report signed by fifteen members, dated 27th June, 1888, and a "Minority" report signed by eight members, dated 12th July following; also a report entering more elaborately into detail, signed by five members: in all cases with individual reservations. It would be vain for me to attempt even to summarise the summaries of this vast amount of information; the more so as much "contentious matter" is interwoven with it. The "Minority" however begins by expressing *seriatim* its agreement with many of the recommendations of the "Majority," and these agreements show a marked advance in the estimate now generally accepted of the nature and requirements of a practical system of popular education. A reference to the report of the former (p. 237 of the vol. "Final Report") can be readily made, though even this portion is too long to be transcribed into these pages, and into the "contentious matter" I cannot enter at all with any hope of doing justice to the allegations made from so many quarters, and from so many widely divergent points of view.

3. Under these circumstances I think the best service I can offer is to place first before you, as concisely as I can, some statements which I have condensed and compiled from the annual returns of the Education Department, thus preserving as far as possible their continuity with those previously rendered, adding to them some explanations drawn from other authentic sources which may throw light upon the meaning of the terms used. I refer now to the provisions of the law and the regulations only, without attempting to prejudge the measure of success with which they have been carried out in practice.

4. In the tables given I repeat the figures of 1882, the last

year given in my paper in 1883, where by so doing the progress in the six years up to 1888 inclusive may be conveniently shown.

(a) The first of these, notices the leading points of the new code of 1882 as far as they bear directly upon the official examination of schools, to which further reference will be made hereafter.

(b) The following tables show an aggregate increase of children on school registers from 4,190,000 in 1882, to 4,688,000 in 1888, or 12 per cent. The attendance has also been more regular, in the proportion of 72 to 77 per cent. on the numbers registered, so that actual school attendance shows a gain of nearly 20 per cent.

The number registered in voluntary schools is 2,908,000 as against 2,884,000, showing an increase less than 1 per cent. in the six years. School board schools comprise only 1,780,000 as against 1,306,000, showing an increase in the same period of 36 per cent.; but taking into account the general improvement in "average attendance," the gain is 8 per cent. in the former and 46 per cent. in the latter. The population meantime has increased by about 8 per cent.

(c) The ages of children on school registers are set forth in Table III (A and B). The largest proportion is between the ages of 6 to 7 and 10 to 11 (five years), but I can find no means of testing whether their regularity of attendance is more or less than the average. There is a marked falling off on either side. The small proportion under 5 to 6 is to be regretted. That room should be provided for these little ones is in accordance with the custom existing long before the Act of 1870, and due provision was required for them by the proceedings taken under it. Some in rural districts may be well cared for in small cottage schools, but there appears to be a disposition in some quarters to evade the obligation of making suitable provision for infants, either from parsimony, or because the objectors have not the slightest idea how bright and pleasant a place an infant school can be made, and how great are the advantages which this early training affords, by means rather of kindly devised play than of "work," especially to those whose parents have little time to bestow upon them during the day. The codes of 1882 onwards have done much to promote such methods of drawing out those simple powers of observation, *i.e.*, of "taking notice," which first come into healthful activity in the early years of childhood.

(d) The next set of tables (IV) refer to the examination of schools in *elementary subjects*, which still indicate an undue preponderance of children in the lower standards, though the last year's returns show a marked improvement in this respect; but there is no hard and fast rule for classification according to age.

(e) The increase in "*class subjects*" (4E) indicates that this

extension of elementary teaching has now been very generally adopted in all classes of schools.

(f) Table V shows the payments made for the *merit grant* in 1884 (the first complete year in which it was awarded) as compared with 1888, indicating an improvement also in the average quality of our schools.

An abstract (No. 6) is further submitted, showing under the principal headings of expense, the disposal of the grant-in-aid for 1888, amounting to 3,201,000*l.*: of this amount 797,000*l.* goes to *Infant* schools; 60 per cent. is paid as a fixed grant, and nearly 30 per cent. on the more discriminating award of the “merit grant.” The remainder is for singing and needlework.

2,314,000*l.* is paid for *elder scholars*; 25 per cent. by a “fixed grant;” 11½ per cent. on the award of the “merit grant;” 17½ per cent. on subjects—of which English must be one—taught in and examined by classes. Needlework for girls, and singing claim under 4½ per cent. The largest single item is the result *indirectly* of individual examination in elementary subjects, which takes nearly 41 per cent.; and regarding this and the “merit grant,” some further explanations may be here made on points which bear on the examination rather than on the general inspection of schools.

5. By Art. 109 of the code, all scholars who have been twenty-two weeks on the registers are *primâ facie* liable to examination, but it is added “that the following, among others, will be considered reasonable excuses for either withholding a scholar or not presenting him in a higher standard: delicate health or prolonged illness; obvious dulness or defective intellect; temporary deprivation by accident or otherwise of the use of eye or hand. If a scholar has failed in two subjects, or twice in the same subject, he may generally be presented again in the same standard.” In the instructions to H.M.’s Inspectors, which are open to all, it is further laid down (1884, Sec. 64), that “managers should be recommended to consider the cases of deficient or delicate children as they occur throughout the year,” and duly record them; and this is more strongly urged in 1887 (Sec. 64). No “fixed proportion of exceptions is to be allowed, as a matter of course, in any case, since . . . in circumstances which are specially unfavourable the number of legitimate excuses may sometimes be large . . . and in determining cases of difficulty it is well to bear in mind that if the claim is made in the interests of the scholar, and because for any reason it is not good for *him* that he should be examined, it should be freely allowed.” Otherwise a more rigid discrimination is to be exercised.

The proportion of “passes” made by those examined individually

subject to and after this revision, is applied to the number in "average attendance," for the purpose of fixing the amount of the grant for "elementary subjects."

6. But what is "a pass?" In a competitive examination the actual severity of the test depends largely on the proportion which the number to be accepted bears to the total number of candidates. In many cases, only a few even of the best qualified can be successful. But in judging of a *test* examination such as that applied to public elementary schools, we want to know what amount of shortcoming is implied by a failure? A clear distinction is drawn in the "instructions" between what may be expected under ordinary circumstances, and what should be required in special cases. The "instructions" can hardly be said to err on the side of too great stringency. Thus in the writing test (Sec. 25) for Standard IV, "a pass should *not* be withheld if the writing is fair, and the errors "in spelling do not exceed three," in eight lines of poetry or prose read slowly once and then dictated (T. 1 code schedule), and these are taken from a book in use in the school. In arithmetic also (Sec. 28), the instruction runs, "you will continue the usual practice of setting in all standards above the first, four sums, of "which no more than one should be a problem" (that is, one requiring the application of a rule), and of permitting a scholar to pass who gives two correct answers. "Right method and arrangement, and good figures, may excuse slight errors in one of the "answers." The tests of the code cannot be termed rigid, unless indeed the object aimed at be to get "passes" as barely as possible.

The average of passes under these conditions was in 1888 for reading 93.45, for writing 86.51, and for arithmetic 84.46 per cent., while complete passes in all three subjects ranged from 65.07 for Standard VI, to 79.87 in Standard II (see Table 4D). A complete "pass" does not mean a pass without error, but possibly a "bare pass" in all three subjects. And as we know many schools pass *more* than this, it follows that many must pass less. No doubt an exaggerated value is too often attached to a high percentage of mere passes without regard to circumstances, and schools may suffer, and even in a pecuniary sense must suffer in the long run, from this error. But I cannot find that the department is responsible for its prevalence.

As far as this routine examination is concerned, it is evident that the work turned out may vary very greatly, and yet secure the same pecuniary results.

The "*merit grant*" was devised to give due weight to quality as well as the quantity of passes. Here again the instructions emphasise the nature and limits of discretionary provisions given. The codes from 1884 onwards (Code, 109*b*), after reference to the

inspector's visits without notice during the year, and the good moral discipline that should be maintained, goes on to direct him to "satisfy himself that the teacher has neither withheld children "improperly from examination, nor unduly pressed those who are "dull or delicate in preparation for it at any time of the year, and "that in classifying them for instruction regard has been paid to "their health, their age, and their mental capacity, as well as to "their due progress in learning."

The "Instructions" (Sec. 48) further lay down, specially as regards the award of this grant, that: "A shifting, scattered, very "poor, or ignorant population; any circumstance which makes "regular attendance exceptionally difficult; failure of health or "unforeseen changes among the teaching staff, will necessarily "and rightly affect your judgment. It is needful, however, in all "such cases to have regard not only to the existence of special "difficulties, but also to the degree of success with which those "difficulties have been overcome."

These instructions, which are periodically issued, and refer to inspection as well as to the more formal test of examination, well deserve the perusal of those who wish to understand the principles of the code, which it must be remembered has to be drawn out so as to cover the cases of schools of very different kinds spread over the whole country.

As for the individual examination in the "three R's," no one supposes that a mere mechanical facility in using them, proves good or intelligent training, but a training which *does not* ground scholars in these elements is surely a very bad preparation for those who have to make their way in the world. Intelligent teaching, which excites in the child an interest in the means through which, to so large an extent, knowledge is, and must be acquired in after life, should make it the more easy to satisfy this practical test.

Further, the Department does not profess to prescribe methods, or control teachers as to the means they employ. H.M.'s Inspectors are specially enjoined (Code, 109 b) "not to interfere with any "methods of organisation adopted in a training college under in- "spection, if it is satisfactorily carried out in the school."

The grant per *head* since 1882, though made on different terms, shows a steady increase in very much the same proportion as formerly, viz. :—

To infants	from	13s. $\frac{3}{4}$ d.	to	14s. 11 $\frac{1}{2}$ d.	or	14 $\frac{1}{4}$ per cent.
„ older scholars	„	16s. 6 $\frac{1}{2}$ d.	„	18s. 2d.	„	9'8 „

7. *Specific Subjects*.—The code of 1882 restricted these examinations to pupils in Standards V, VI, and VII. Table VII shows the different subjects ranged according to the numbers by which they

have been taken up since 1884, and the general percentage of passes for the last year averages about 70 per cent. There is considerable difficulty in getting exact figures from returns made in different ways, but the whole number examined is much under 2 per cent. of those in these three higher standards. Not more than two subjects (except in some exceptional cases) can be taken, and the long list exhibited shows only the range of choice suggested to managers; if good cause is shown, other subjects not included in it may be substituted. A large number of particulars are given in the table, as, notwithstanding the small amount of money involved, the question is one of much interest. It must however be considered in connection with the grants of the Science and Art Department (*post*).

8. *School Accommodation*.—The total numbers given (Tables 1A and 17 in the Returns of the Department) are:—

School accommodation.....	5,357,000
Number of all ages on the registers	4,688,000
„ present on day of inspection	4,233,000
„ in average attendance	3,615,000

This looks at first sight as though the space provided were ample, if not indeed excessive. But this conclusion is by no means warranted, though it may be admitted that, broadly speaking, the back of the difficulty has been broken. So large a general average will cover many irregularities, and an excess in some quarters cannot in practice be set off against a deficiency in others. Moreover, as the Minority report points out (p. 246), “a large number of schools are structurally much below any proper standard of “efficiency,” and this is fully supported by the detailed returns made by the commissions already referred to.

Further, the space of 8 square feet, especially when calculated on “average attendance,” is, to say the best of it, a very bare minimum.¹ Older children cannot be seated, and due space allowed for infant exercises, leaving enough for the teachers to move about freely among them, at less than 10 square feet per child in the aggregate. It was long ago found that plans could not be contrived with a less area than this, and many required much more. Indeed it is very doubtful whether owners of schools built formerly with the aid of a grant (see Mem. XII, Building Grants), but mainly out of private resources, and always on this higher scale, would submit to have them overcrowded by an attendance up to 8 square feet, indeed, Art. 92A of the code states that the average attendance “*should not*” exceed the number for which plans were approved.

¹ A height of 10 feet, giving a cubic space of 800 feet, is also required as a minimum for sanitary reasons; but to this I need not here refer.

Many school boards also have planned their schools for a more adequate area per head. But this is not exactly the point; what we want to know is the rate at which the accommodation provided is taken in estimating the provision made for the district generally. This is by no means clear, and we have before us the danger which Mr. W. E. Forster sought to guard against. Provide at once, he argued, adequate space in schools, that the fear of expense may not hereafter slacken efforts to bring children into them.

If the accommodation provided is, generally speaking, only at 8 square feet, it affords the desired minimum of 10 square feet for little more than 4,286,000 only; a deficiency of over 9 per cent. for the number on the registers, and about equal to the number given as present at the annual inspection. Even if we *could* suppose that this accommodation were equally distributed, there is very little margin here, and the vehemence of the opposition raised to the notice given in the (rejected) code of 1889 of an "endeavour to secure" at least 10 square feet for each "unit of average attendance," indicates that the existing provision is in many cases on a very narrow scale.

But the basis of "average attendance" is manifestly unfit for the determination of the space required in schools. Irregularity of attendance is one of the greatest difficulties against which teachers have to contend; to a certain extent it is inevitable. Distance, bad weather and bad roads, harvest work, epidemics and divers other causes, prevent children from getting to school in certain seasons; but the space thus left vacant is of no avail on all those occasions when some attempt can be made to make up for lost time. A school so planned must necessarily be overcrowded whenever circumstances are favourable for a full attendance. It is true that the term found its way into the codes; a grant was not forfeited if the space were sufficient to give 8 square feet on "*average attendance*," and there was reason for dealing leniently with schools during a period of transition, but provision under the *Act* of 1870 was required on the rational *basis* of the number who should come to school, though a large allowance for exceptions was made upon it. Ten square feet on existing "*average attendance*" may happen to suffice tolerably well, but the basis is not the less illogical and misleading. Imagine an omnibus company, for example, arranging its accommodation for all hours on the average of a fluctuating traffic; what complaints and crowding there would be in the busy times of the day! But the strongest reason against this basis of calculation is, I repeat, the constant temptation that it offers to keep down attendance to the limits of the existing accommodation.

9. There is another point which I wish to bring forward of more

general application: the assumption that the public elementary schools would suffice for the children of six-sevenths (85·7 per cent.) of the whole population is no longer tenable. Since this estimate was first made, twenty years ago, the quality as well as the range of instruction offered in them has been greatly improved and extended. This and the great deficiency of what were known as “lower middle class” schools, has—apart from the question of cost—forced the use of the former upon a class for which they were not originally designed. The inevitable overlapping of these and what the Endowed Schools Commission termed Third Grade Schools, was commented upon in the Report of the Charity Commissioners as far back as 1882.

The table given below² places in juxtaposition six-sevenths of the numbers of children up to 14 years old, with the numbers of those of corresponding ages recorded on school registers. Upon these data, which I see no reason to doubt are precise enough for all practical purposes, it appears that no less than 97 per cent. of children (the maximum on school registers) between the ages of 9 to 10 and 10 to 11 years now resort to public elementary schools. Why this maximum is not reached till the ages of 9 to 11 years is another question which requires sifting out, but it does not seem to me to

² Statement of estimated numbers of children “of the class usually found in “public elementary schools” (six-sevenths of whole) for each year of age separately; also the number of them on the registers, with the proportion which the latter bear to the former, worked out centesimally.

[000's omitted.]

Ages.....	2—3.	3—4.	4—5.	5—6.	6—7.	7—8.	8—9.	9—10.	10—11	11—12	12—13	13—14	14.
Six-sevenths of estimat- ed popula- tion, 1888	652,	631,	630,	624,	609,	594,	580,	566,	552,	540,	528,	518,	508,
On school re- gisters	7,	135,	311,	480,	539,	544,	544,	549,	538,	494,	374,	155,	44,
Percentages...	1	21·2	49·4	77·0	88·5	90	93·8	97·0	97·5	91·5	70·8	30	8·6

For the population of 1885 and of 1882 with the same proportion of ages, the proportion on school registers was shown as follows:—

Ages.....	2—3.	3—4.	4—5.	5—6.	6—7.	7—8.	8—9.	9—10.	10—11	11—12	12—13	13—14	14.
Percentages, 1885	1·4	21·2	48·5	78	87·0	92·0	95·7	96·5	96·3	87	68·7	29·0	8·2
Percentages, 1882	1·9	20·6	47·3	73	72·5	91·5	91·0	93·5	90·0	84	66·5	33·5	10·0

* * * The numbers of population are taken from Table 14 of 1882, and Table 18 of 1885 and 1888; those of children on registers from Table 14 of 1882, and Table 1 A of 1885 and 1888, in the returns of the Education Department.

affect the conclusion that the classes using these schools are certainly *more* than six-sevenths of the whole population. For we well know that *all* children are not on school books who might be recorded in them. Some few are kept away from ill health or other exceptional causes, the validity of which must be admitted. There are further institutions of various kinds, schools with “certificates of efficiency,” [Table IX,] homes, asylums, and so on, and though all these items are comparatively small, they must be far more than the margin of 3 per cent. (100-97) shown. The requirements under the Act of 1870 allowed 15 to 16 per cent. for such causes of abstention, and bearing in mind where the line was formerly drawn in the social scale, I believe that the proportion of nine-tenths would *now* be found nearer the mark than the six-sevenths then adopted; and that a shortcoming is implied outside the school system of those on the lower side of the scale.

10. It is as impossible as it would be impolitic to keep out any children whose parents elected to send them to public elementary schools. In the larger towns some may be drawn away by special schools of a more exclusive character, if these can be maintained at a sufficiently low rate of cost; but the tendency rather is to resort to them after first going through the standards in the schools common to all; and the difficulties of passing from one to the other are not greater than can be soon mastered, especially as those who desire thus to extend their educational career are for the most part somewhat above the average in energy or capacity. Technical schools will look for a sound grounding in the rudiments before admitting pupils into their classes, and their multiplication will tend rather to increase than to diminish the numbers in elementary schools of good standing.

There are also many rural districts the educational welfare of which is essential to the nation at large, but which are apt to be too little regarded in our London discussions. Nevertheless the towns which draw so much of their labour from the country are closely concerned in all questions regarding the “efficiency, sufficiency, and suitability” of their schools. Where the population is sparse, as it is in so many of these districts, there is practically no choice except between the public elementary school and boarding schools, which can only be few and far between. At best, in many poor districts small schools must have much difficulty in making their organisation complete, and “specific subjects” will be almost out of the question. Something more might be done in the way of grouping several schools within the reach of younger children, with one affording a higher range of instruction for older children drawn from a larger area; but can we hope to see generally the co-operation that such an arrangement would require? But no

such extension, however desirable it might be in special cases, could be met without a liberal increase in the accommodation now frequently afforded in public elementary schools.

The question of "*free schools*" forms a part of the subject into which time will not permit me to enter, but I have placed in the Appendix a table (XI) of the income and expenditure of public elementary schools, drawn up so as to show at a glance the amount and proportion of the several items as they apply to voluntary and school board schools respectively, in contrast with the amount of "school pence;" also a Memorandum (XIV) showing the population under school boards and school attendance committees.

It is not, however, merely a question of the supply afforded, but even more of the adaptation of that supply to the existing wants of the population. How many are there who still evade school altogether? How far is any provision made outside the system, calculated to raise the shiftless poor who hold so doubtful and precarious a place in the ranks of self-supporting industries, and whose children suffer from their helplessness or neglect? What facilities on the other hand are afforded for passing on those children to "higher" "technical" or other special schools, who give good reason to believe that they will benefit by the further instruction afforded in them; and how far are these facilities afforded generally throughout the country?

The public elementary schools are for all, even the poorest classes; but it does not follow that all children can be indiscriminately swept into them, without detriment to the maintenance of that good order and discipline which is so essential a part of training. Many instances might be cited of most noble work done with children apparently of the most hopeless character; but high capacity of this nature is indeed a rare gift, which no system can command at will. Have we yet reached all who can be reached? In towns we have truant schools for the most incorrigible, but it is open to question whether in many cases the severe discipline in them inspires more than terror, and whether a longer course of suitable training is not necessary for their reclamation.

11. Some mitigation of the difficulty may be found in the extension of teaching on the kindergarten lines, or on such as those of the "*Sloyd*" system, which professes to use carpentering and other manual work *as a means* of mental training. The prominence now given to drawing in all its branches, and "the graphic method" generally, is a recognition of the principle involved. It is agreed that schools should not attempt to teach trades, which can only be learnt practically in the workshop, but that those faculties should be cultivated in children which will hereafter be applicable to whatever industry may be required by the country.

The best method of training by means of visible objects (intuition by inspection) is however comparatively a new problem, while the experience of ages has been brought to bear on the traditional scholastic methods. But this much we do know:—that all work is brainwork, whether called mental or manual, and their connection is far too close and subtle for any hard and fast line to be drawn between the two.

Further, new means must needs be brought into use to meet the wider range of education which is now accepted. There are children to be taught by no means stupid or unobservant, who seem to be hereditarily illiterate, not merely illiterate on account of their surroundings. Books and book methods are a puzzle to them, and equally so to their associates. Their interest can only be excited by reference to objects with which they are familiar, and an appeal to those faculties which have already been called into activity. Into some schools the methods referred to have already been introduced, and regarding them I will venture to offer this suggestion, which will at all events be practicable in our larger towns: let some schools—how many experience only can determine—be specially organised throughout on this basis, and thus give to parents—or to those who may be their competent advisers—an alternative as to the course which is most likely to lead on their children to the mastery of the first elements of knowledge. This plan might also, I submit, be found to have the further advantage of lessening the difficulties of classification which inevitably press with special severity on our public elementary schools.

12. The data supplied by returns for the whole country could not in any case suffice to show *where* shortcomings are to be found, but they do suggest most forcibly, the more fully they are examined, that shortcomings there are, which should no longer be overlooked. Indeed, it must be kept in mind that the returns now made do not even profess to give more than an account of the system as it is now formally at work under the Education Department. We have as yet no report which throws any adequate light on the state of educational affairs which may exist outside the limits to which it has hitherto confined its supervision.

It is no new suggestion that H.M.'s Inspectors should be called upon to report fully and in detail on the nature and adequacy of the provision made, or in progress, or not made, throughout their respective districts, including of course such as might be practically available in other districts beyond their own. On such a report as this action could be confidently taken, not only to make good local deficiencies, but further to provide in due degree such special schools as necessarily draw their scholars from a large area of population. The *Census* of 1891 will now very shortly be upon

us and it is much to be desired that the Department should be in a position to make prompt use of the particulars which it will afford.

Its returns, among other things, should include further information as to the migratory character of a considerable portion of our population—a condition which requires that regard should be had to a reasonable degree of uniformity of plan in the instruction given in all our primary schools.

13. If in the foregoing remarks I may appear to have dwelt too much on the “lower” side of our educational work, it is not from any want of sympathy with its “higher” extension. The direct aim of the Education Act of 1870, and the legislation based upon it, was to leaven the mass of the population with a competent amount of knowledge, and to raise them mentally and morally by the discipline without which no school can possibly be maintained; but the school must above all things be regarded as the preparation for the continuous education which must be drawn from the manifold experiences of actual life. The religious element was formally excluded in so far only as it was found to be in fact one of irreconcilable strife and discord. Its educational aims, however, far as they were above the opinions of the preceding generation, were found too low even for the lowest estimate of practical success. Gradually and persistently, though by slow degrees, they have been raised, especially as regards the qualifications of teachers, and the numbers required to carry out the work assigned to them. While the “art of teaching” is still regarded as of the highest importance, the necessity of a “liberal education” is more fully recognised on their behalf. The gross fallacy that ill-informed and ill-trained teachers were the fitting instructors of dull and ignorant children, now lingers only in dark corners of the land. Still this great duty remains: while our public elementary schools must keep up their touch with all the more advanced ranges of culture on the one hand, they must not be suffered to lose touch with the industrial school on the other, though, as already intimated (Sec. 10), some extension of the latter in a modified form, not of a penal character, may be found necessary, where exceptionally “difficult” children may receive that continuous discipline which their cases require, but which cannot be afforded in a day school, however ably conducted.

There are many—indeed, the great majority in *all* classes—who will never rise to distinction in life, but who yet constitute the great mass of the population whose well-being and well-doing are essential to the welfare of the nation; whose judgment, though sometimes slow, and liable for a time to be misled, has yet often proved to be in the aggregate notably sound and temperate in the long run. Even those who failed to perceive the benefits of popular

education, have been brought to recognise its necessity, from the conviction that without it we could not hope to maintain our high position among the nations of the civilised world. The “staying power” of a country, in the contentions alike of peace or of war, depends upon the condition of the great mass of its population.

When I hear at some great school meeting of the success which has won prizes or scholarships, or the higher distinction of a university degree, I respond with all my heart to the congratulations offered to both teachers and scholars. But I have too often missed the expression of hearty sympathy and appreciation which is due to the less conspicuous, but not less arduous, labours of those whose self-denying energies have been devoted to save those who from lack of knowledge are drifting helplessly into the abysses of pauperism, and to raise the great mass of their fellow countrymen to a higher level of self-respecting and self-supporting independence.

14. *Teaching Staff*.—There has been a steady increase in the staff of teachers of all grades during the past six years, particulars of which are set forth in some detail in Table VIII; but the subject, though technical, is of so much importance, and bears so directly on some points now under discussion, that I add some explanatory remarks upon it.

Certificated teachers, though all equally recognised by the Education Department, are distinguished in its returns as *untrained* or *trained*. It will be most convenient to begin by briefly referring to the earlier stages of their career.

(a) Pupils, boys or girls, not less than 14 years old, who have satisfactorily passed through the ordinary school course, may be engaged by school managers as *pupil teachers* for a term of four, three, or two years.

(b) On passing (not before their 18th year) on the last year of their engagement a final examination in school, or that for *admission* to a training college, they may be recognised as assistant teachers in public elementary schools.

(c) They may also, if specially recommended by H.M.’s Inspector on the ground of practical skill as teachers, be recognised as “provisionally certificated teachers in charge of small schools,” up to the completion of their twenty-fifth year.

(d) The same recognition is given to—

(1) Graduates of any university in the United Kingdom.

(2) Women over 18 years of age who have passed university examinations as under noted.³

³ The examinations recognised at the present time are:—The Oxford local examination for senior students, the Oxford University examination for women, the

(e) The examination for certificates is open to those—

Who have been students in residence for *not less than* one year in a training college;

Or, employed for two years as provisionally certificated teachers;

Or, served as assistant teachers for at least twelve months in inspected schools under certificated teachers;

and have obtained a favourable report from H.M.'s Inspector on their skill in teaching and reading.

(f) All teachers, in order finally to obtain their *certificates*, must undergo probation for not less than eighteen months by actual service in school. (Code, Art. 62.)

(g) Candidates, not being students in any training college, may at their option take up the papers of first or second year students, and a list is published showing the successful candidates, whether students or not, which is arranged in three divisions. Those placed in the third are not permitted to have pupil teachers under them, but may be raised to a higher class on re-examination.

(h) Candidates before *entering* upon their course of special study in a training college, “must sign a declaration that they “intend *bonâ fide* to adopt and follow the profession of teacher in “a public elementary school, or training college, or in the army or “navy, or (within Great Britain) in poor law schools, certified “industrial or day industrial schools, or certified reformatories.” No such obligation is imposed on any other teachers. When admitted into a training college the students are termed “*Queen's scholars*.”

(i) The usual certificates regarding health, &c., required for entrance into any branch of the public service, must also be given.

(k) Lay persons only are recognised as teachers in day schools, but this restriction does not apply to teachers in evening schools.

These, I think, comprise all the general conditions which must be fulfilled in order to enable a teacher to obtain a Government certificate.

In all other respects the responsibility of selection rests at all stages with the managers of schools.

It will be seen that a very legitimate use is made of the entrance examination of the training colleges. The preliminary course, as far as regulations can make it so, is the same for both. Of the advantages of a course of training no doubts can be entertained,

Cambridge local examination for senior students, the Cambridge higher local examination, the University of London matriculation examination, the Dublin senior examination for women, the Edinburgh local examination for senior certificate, the Glasgow local examination for senior certificate, the Aberdeen local examination for honours certificate, the St. Andrew's local examination for senior certificate, the St. Andrew's LL.A. examination for women.

and we are now, I trust, in a fair position to enter upon the comparison between the numbers of untrained and trained teachers.

15. An analysis of the total *increase* from 1882 to 1888 throws some further light on the nature of the advantage gained during this period of six years. The increase in *certificated* teachers, both untrained and trained, has been in the aggregate proportion of 25 per cent., but that of females alone has been about 29 per cent., and of males alone 21 per cent.

But taken separately, the aggregate increase of *untrained* teachers has been 38·4 per cent.; of females alone 43 per cent., and males alone 27·3 per cent.; while of those *trained* the increase has been only 18½ per cent.; females in larger proportion than males (*viz.*, 19 to 18 per cent.). Taking however into account the far larger number of females, their total proportion of increase is at the rate of 68 per cent. untrained, to 32 per cent. trained. The increase of males is 40 per cent. *not trained* to 60 per cent. *trained*.

There has also been a large *increase* in assistant teachers, at the rate of 54 per cent. males, and 108 per cent. females, during the same period.

These figures speak for themselves, though I am far from drawing any hard and fast line between the two descriptions of certificated teachers, but while some, though technically “untrained,” may have found means of self culture, or by dint of energy and natural aptitude acquired skill and practical experiences of the highest order, there are many who are far less favourably placed in every respect, and are at a manifest disadvantage in carrying out the higher work of their profession. Of fully trained teachers about the same proportion have been engaged for the most part, it may be presumed, in schools of the higher order, while, of those untrained, a far larger proportion of females (78 to 22 males) have, during that period, been engaged in schools of more humble pretensions.

The entire teaching staff of our public elementary schools for 1888 was composed in round numbers of—

24,200	trained certificated teachers, a little over half being masters,
20,400	untrained certificated teachers, of whom only 28 per cent. were masters,
19,100	assistants, of whom 27 per cent. only were males,
29,900	pupil teachers, with about the same proportion of males,
5,000	female assistants, engaged chiefly in needlework, but aiding generally in school work, who may take the place of pupil teachers,
98,600	in all.

Of whom rather more than two-thirds are females—not including probationers or monitors—the addition of whom would swell the

total to over 100,000. This is an increase of a third upon the numbers of the aggregate of the staff in 1882, which is on the whole satisfactory. Many schools have now more than the *minimum* of teachers required, but *not* recommended, by the Department.

This minimum under the code now in force is as follows: the numbers substituted in the code *proposed* for 1889 are added in brackets:—

For each principal certificated teacher....	60 (60)	on average attendance.
„ additional „	80 (70)	„
„ assistant teacher or provisionally certificated teacher	60 (50)	„
„ pupil teacher	40 (30)	„
„ candidate or probationer	20 (20)	„

The number of pupil teachers must not exceed three for the principal, and one for each certificated assistant teacher.

This increase in the strength of the staff will obviate the strongest objections which have been taken to the “pupil teacher” system.” Hitherto they have had so much to do as “teachers,” that they have had too little time or energy left to be “pupils.”

16. *Training Colleges*.—The number of these institutions is given in the last report of the Education Department as 44; 17 for males, 25 for females, and 1 (Homerton) for both sexes; the respective number of students being 1,400 and 3,270. Of these colleges 30 are in connection with the Church of England, 6 with the British and Foreign School Society, 2 are Wesleyan, 3 Roman Catholic, and 3 are returned as “undenominational.”

It further appears from Dr. Fitch’s report, that during the past three years, out of the total number of 6,027 teachers who have received certificates entitling them to act as school mistresses, 2,772 (46 per cent.) are trained, and 3,255 (54 per cent.) are untrained.

Comparing these with the numbers already given (see Table VIII), it will be seen that there is some improvement in the proportion of trained to untrained mistresses, and the number of female *students* who have passed the examination at the end of the second year of training, contrasts favourably with that of the males, viz.:—

1888.	First Division.	Second Division.	Third Division.	Failed.	Total.
Males	274	321	93	—	688
Females	320	544	66	1	931
	594	865	159	1	1,619

The following summaries of the result of the examination for *admission* into training colleges are suggestive:—

	Examined.	Passed.				Failed.
		First Class.	Second Class.	Third Class.	Total.	Total.
<i>Males—</i>						
Pupil teachers	1,717	262	708	232	1,202	{ 561 80 }
Non-pupil teachers	126					
	1,843	—	—	—	—	641
<i>Females—</i>						
Pupil teachers	2,870	605	1,237	336	2,178	{ 784 447 }
Non-pupil teachers ...	629					
	3,499	—	—	—	—	1,231

The comparison between the success of male *students* and *acting teachers* respectively in the examination for certificates is further shown as follows: of the former none failed, while 34, 53, and 13 per cent. passed respectively in the first, second, and third class in the first year's papers, and 39, 50, and 11 per cent. in those of the second year; while of the latter a large number failed altogether, and *none* passed in the first class, 4 only in the second, and 96 in the third class in the first year's papers, and 5, 33, and 62 per cent. in the first, second, and third classes respectively in those of the second year. Some particulars regarding female teachers have already been given. By this test the superiority of the *students* is shown very clearly. It does not, however, directly touch the question of practical ability in school keeping. Probably the difference would not be so marked if young teachers in remote districts had better opportunities of getting some assistance in carrying out a systematic course of study. Many who are unable to attempt, or fail to pass into the collegiate course, fall in these early stages out of the ranks of teachers.

The annual average cost per head for instruction, board, and permanent establishment charges, varies considerably under obviously very different conditions. It ranges for *males* from 49*l.* 12*s.* (Durham) to 70*l.* 2*s.* (Chelsea); averaging 60*l.* 2*s.* And for *females* from 34*l.* 11*s.* 2*d.* (Swansea); to 61*l.* 16*s.* 9*d.* (Wandsworth); average 44*l.* 9*s.* 7*d.* The lowest cost in England is however 35*l.* 7*s.* 3*d.* (Edgehill).

These institutions have always been largely subsidised by the State. Grants to the extent of 100*l.* for every master and 70*l.* for every mistress are placed to the credit of their colleges at the completion of the term of probation referred to in para. 14*f*, but the grants are not to exceed two-thirds of the expenditure. Advances, however, are made, subject to this general restriction, by three annual instalments of 12*l.* each for males and 8*l.* for

females for all Queen's scholars in residence, leaving a balance only to be ultimately adjusted. (Code, Arts. 128 and 132.)

The practising schools where students gain experience in the practical art of teaching are also favourably reported upon. They are subject to examination by the district inspectors in the same way as other public elementary schools, and are a most important feature in the collegiate system.

The inspectors of training colleges (Mr. H. E. Oakley for schoolmasters, and Dr. J. G. Fitch for schoolmistresses) are assisted in the examination of papers by other inspectors, who are actively engaged in the work of school examination. We have thus, from their reports, which are quoted at some length, the opinions of those who see most of the work of teachers generally, and may further gain some insight into their own views as to the scope and nature of the instruction which should be given in public elementary schools. Reading between the lines, it is sufficiently evident that they are not all quite of the same mind on this subject, nor is it at all desirable that they should be so.

The general reports of the chief inspectors are full of interest. Mr. Oakley points out that the colleges "are very unequally situated in respect of the attainment of their students at *admission*;" and this should qualify any opinion formed regarding their relative merits. He fears "that as a rule students come badly prepared, though perhaps there is a slight improvement." Principals "speak highly of the diligence and good conduct of their students," and he "has much pleasure in endorsing this statement from his independent observation." He again forcibly calls attention to the importance of good *reading* in all stages. As regards the certificate examination, the detailed reports vary; but these and his own inspection of colleges suggest to him the general conclusion that "the students work very hard, and greatly improve during their two years' training. The best of them, those placed in the first division at the final examination, are well prepared for their future work. Those in the second division are fairly educated for it; but those in the third are as a rule very imperfectly equipped, and are unable to instruct pupil teachers properly."

To Dr. Fitch's report I have already referred as regards the increase in trained schoolmistresses. He reports that "there is no material change in the character of the teaching in the colleges, but that there is a steady improvement in the qualifications of the teaching staff." He draws attention to the recommendation made by the Royal Commission of 1886 in favour of day training colleges to supplement, but not to supersede, the present supply, "with a view partly to provide for professional training under

“newer and more varied conditions, and partly to diminish the “number of untrained teachers.” He considers that where sufficient provision could be provided for them, day pupils might be admitted into the existing colleges, and add materially to their influence and usefulness. The difficulty sometimes alleged that their introduction would interfere with the due maintenance of discipline, he does not regard as insurmountable, if met by skilful administrative arrangements.

He favours also the recommendation in the draft code of 1889, providing that all acting teachers should be under the same obligation as resident students as far as regards their examinations, and that all alike, whether from training colleges or not, should *not* be qualified to receive pupil teachers if classed in the third division. This is in substantial agreement with the citation from Mr. Oakley’s report quoted above, and a reference to the figures just given will show the extent to which this disability would operate.

This report contains also the notes of his visit to America. The development of national education in the 42 States which now compose the Union, but in which each have independent control of their own school systems, affords and will afford very many varied experiences. This notice will well repay a careful perusal, both for its inherent interest, and the valuable information it affords on topics which command the attention of all concerned in educational problems.

17. *The Science and Art Department*, though the range of its action is more widely extended, is very closely associated with popular education. There is some difficulty in dealing with the figures presented in its report, as many of the returns are made for England and Wales, Ireland, and the Isle of Man together, while some very similar work done in Scotland is paid for through the department in that country. The conditions under which Irish schools are carried on differ so much from those which obtain in England and Wales, that it would certainly be desirable to give separate summaries for them.

Instruction is now given by teachers holding certificates from this department to over a million of students, the nature of which is shown generally by Table XVI in the Appendix, and I shall now proceed to give some further particulars of that part of its work which is more specially connected with popular education.

The number of schools, classes, and students thus receiving elementary scientific instruction in 1888, shows a steady increase, and in the May examinations, 1,386 schools were examined in England, 227 in Scotland, and 289 in Ireland: the number coming up for examination being 70,162, an increase of over 11 per cent.

on last year; and in addition to these, 3,876 self taught students and pupils from classes not entitled to claim payment by results, presented themselves; making a total of 74,038 actually examined. An average of nearly two papers, each in a separate branch of science, were worked by them: 54,715 passed in one or more subjects.

The examinations were held in 1,512 centres in the provinces (England, Walès, and Ireland), and 114 in London, attended by a considerable increase in the persons under instruction, and a proportionate increase has been maintained in the work presented.

The payments made on results (exclusive of those to training colleges) were 85,562*l.*, as against 84,375*l.*, being on the average for—

	£	s.	d.		£	s.	d.
Each individual student under instruction in 1888....	—	15	2	1887	—	16	4
„ student in each subject	—	8	3		—	9	—
„ paper worked out at examination	—	12	3		—	13	2
„ individual student examined.....	1	4	4		1	4	11

“ The disproportionate increase of cost in relation to the large increase of students is due to a slight rise in the standard of examination, especially in some subjects, *e.g.*, agriculture, which had previously been treated exceptionally leniently; secondly, to a strict enforcement of the rules, limiting the number of subjects on which payment on results may be made for any one student; and thirdly to the abolition of payment for elementary mathematics in the case of pupil teachers.”

The aim is rather to raise the standard of attainment to an adequate level than to draw a large number of students. Here, as with “specific subjects” in public elementary schools, we may expect a diminution from such a cause, to be followed by a reaction in a few years when better instruction is brought to bear on better preparation.

For England and Wales *only*, the grant paid for science and art schools is returned as follows:—

Science grant	63,300 <i>l.</i>	Under instruction	83,000	Avg. grant per head	15 <i>s.</i> 3 <i>d.</i>
Art	„ 32,100 <i>l.</i>	„	63,500	„	10 <i>s.</i> 1½ <i>d.</i>
	<u>95,400<i>l.</i></u>		<u>146,500</u>		<u>—</u>

There has also been given during the past year in prizes, 1,729*l.* for “science;” and 4,974*l.* for art; together, 6,703*l.*; in grants for supplying apparatus, 2,918*l.* for science, and 746*l.* for art, together, 3,664*l.*

And further, for the encouragement of more advanced study, 2,900*l.* have been paid for local scholarship in art, and 3,200*l.* as exhibitions in “science” in the form of maintenance allowances of

20s. to 35s. a week. Fees are also paid for free studentships, and under certain conditions, 15*l.* a year is granted to student pupil teachers; in all about 10,000*l.*

Drawing is also taught to no less than 806,000 children in 3,531 *public elementary schools* in the United Kingdom, under the rules and subject to the examination of the department.

Of these about 570,000 in 2,900 schools are in England and Wales, about 45 per cent. being board schools, specially in the manufacturing districts, London and Liverpool.

The total amount awarded in 1888 to elementary schools for grants was 42,000*l.*, against 33,500*l.* in 1887, of which about 590*l.* were to Ireland and the Isle of Man. The classification in England, Wales, and Ireland being—

	Fair.	Good.	Excellent.	Refused.
England, Wales, and Ireland, per cent.	36·6	53·4	9·1	0·9 = 100
In Scotland, where two grades only are distinguished, per cent.				
		Fair.	Good.	
		29	70·3	0·7 = 100

A long list of these schools is given in detail in the annual report, comprising more than 80 pages of closely printed matter.

A still more important part of this work is carried on in the training colleges, in subjects required for the *Elementary School Teachers' Drawing Certificate "D."* The changes made in the requirements for this certificate are "the necessary complement of alterations now required in elementary schools. The use of drawing instruments, drawing to scale, and drawing geometrical figures, plans, and elevations, now form part of the instruction from the lowest standard to the highest."

In 51 training colleges examined in 1888—

1,613	students took freehand drawing, of whom 695 took first class.
1,547	„ geometrical drawing, of whom 904 passed.
1,196	„ model „ 449 took first class.
1,860	„ perspective „ 1,085 „
1,648	„ blackboard drawing from memory, of whom 998 passed.
319	„ drawing from models with chalk on the blackboard, of whom 139 passed.
257	„ drawing in light and shade, 97 passed.
<hr/> 8,440 examinations.	

the number of individual students being 3,926; the number of passes and of first class, as stated above, being together 4,367.

In addition to these, 1,457 passes were worked by external teachers or assistant teachers, of whom 698 passed. These returns, however, include 8 Scottish colleges.

An analysis of the *general* return for the total grant made by this department on payment by results to *training* colleges, shows—

Colleges Examined.	Students.	Number.	Grants Paid.	
			£	£
43 in England and Wales {	In science	2,398	3,937	
	„ art	3,069	1,905	
		5,467		5,842
8 „ Scotland {	In science	480	606	
	„ art	857	420	
		1,337		1,026
	Total students....	6,804		6,868

How far these proportions represent those in which *elementary drawing* has been taken up in the two countries respectively it is impossible to say; but I have presented these particulars fully, in order to show how much scope and variety there is in the subject of drawing as it is now understood. Its practical utility is of the most general character. It is applicable to exposition in schools and for the common affairs of life, as well as to the purposes of art, of surveying, and of engineering. The “graphic method” will instinctively come into use with the ability to apply it with facility and accuracy. Rightly used it affords a new language for the faculties which it calls into activity, and if on the side of art it may be prone to run into the excesses of fancy, the exact methods of science will bring it back to those regions of fact where even the elements of statistical “curves” have to be duly verified.

I have referred to those points which most directly touch elementary schools. It may be interesting to quote the total of expenditure for all purposes for the United Kingdom, viz.:—

	£
Expenses of administration {	29,000
To encourage instruction in science	100,000
„ art	98,000
Services common to both science and art	63,000
Instruction supported or aided by the State } through this department..... }	57,000
South Kensington and Bethnal Green Museums.....	86,000
Total	434,000

in all of which our common schools are more or less nearly concerned.

18. (a.) Beyond the range of the public elementary schools system, the returns of 1888 contain a record of 336 schools, with an average attendance of 12,500, which are examined for *certificates of efficiency* under the Act of 1876. Only 30 per cent. of the teachers are certificated, and they are evidently very small schools, as the

average attendance per school is barely 40. A memorandum regarding them is given in the Appendix (No. IX). The number of them is steadily decreasing.

A brief notice should be made of some other special schools which though comparatively small have a distinct character and are essential to a complete scheme of popular education. (b.) The returns of the *Local Government Board* show that there are nearly 30,000 children, 17,000 boys and 12,700 girls, in "average attendance" at *Workhouse, Separate Poor Law, and District Schools*. In 306 Unions out of 647 they are sent to the public elementary schools. Anything that tends to associate these children with the life of independence around them is much to be desired. In some of these schools industrial work is very effectually carried out. In them also the half time system has fair play, and it would be well if these advantages could be made more generally available. Half-timers in a school organised for full time are obviously out of place, and can only be tolerated because irregular attendance is now so prevalent, that their inclusion is only an aggravation of an ever-present evil, but this to a great extent we hope to see remedied ere long. The touch which it is so desirable to keep up between public elementary schools and those which are far more completely under the control of the law, cannot be maintained unless some pains are taken to bring their action in this debateable ground into better harmony.

(c) The numbers returned as boarded out are now over 4,000, about one-third under the orders of 1870, outside the unions, and two-thirds under those of 1877, within their limits; the total number of the class concerned is over 40,000.

Further powers have been given to guardians by orders of 1889, extending those of 1870 and 1877, to avail themselves of the services of "*The Association for the Advancement of Boarding Out*," and of their certified committees, which lay themselves out to find foster homes for orphans and deserted children, and make themselves responsible for their supervision, either *without* or *beyond* the limits of the union upon which they are chargeable. Much will no doubt depend on how far foster parents can be found in a position to give employment to such children in home and household work, which is indeed the best of training; the schools common to all will provide for their more formal education.

Powers are also more clearly given to guardians to maintain their control over boys up to the age of 16, and girls up to 18, who have been deserted by their parents. The safeguards provided against the misuse of these powers appear to be well devised and adequate, and it is to be hoped that the need of "pauper schools" will be greatly diminished by the operation of this system.

(d) The report of the Royal Commission (C. 5781 of 1889)

on the *Blind*, the *Deaf and Dumb* (Deaf Mutes), and *Imbeciles* shows that these also are now coming within the range of popular education. The numbers of the *blind* were given as nearly 23,000 at the last census, but some are probably omitted. The number who lose their sight from accidents in trades, or from ophthalmia, is decreasing. The training given is in many cases so efficient as to render them independent, and about 58 per cent. follow the trades they have learnt; the weaker and less capable however can obtain work only at very low wages, and some few only fall into beggary. It is with them as with others, the strong overcome the difficulties under which they labour, the lower (and except as beggars the weaker) are heavily overweighted by their defect. Several school boards in different towns have made special provision for them at an extra cost of 7*l.* to 8*l.* per head, and the appointment of a special blind inspector is suggested, who can judge fairly of the work which they may be expected to do.

Of *deaf mutes* it is more difficult to find out the number, as the defect is not discoverable in infancy. It is estimated at about 35,000, of whom 4,000 to 4,500 should be in schools, which, however, contain little over 3,000. Great differences of opinion exist as to the best method of teaching them. The three systems are (1) the "sign and manual," which may roughly be described as talking with the fingers and by gestures; (2) the pure oral, which teaches the pupil to *see* speech by watching the lips of the speaker. The latter is practised with amazing success, and brings the learner into full contact with ordinary men, while the tendency of the former is to confine the learners to the society of their fellow mutes. The *third* system combines the two. The first is easier to learn than the second, and more readily acquired by ordinary pupils, but the use of it in a school where both are taught is said to relax the efforts of those who with due pains are well able to master the more perfect method. It is recommended that the inspector for this oral method should be chosen from those who have no defect of hearing, which is strong testimony to its efficiency. A large number of deaf mutes now find employment in various handicrafts. The Science and Art Department has introduced special modifications into its standards so as to render them applicable to the blind and to deaf mutes.

For both a capitation grant to the extent of half the extra cost, not exceeding 10*l.*, is recommended, and guardians are now authorised to incur expenses for these classes either directly or by subscription to special institutions.

It is difficult to draw a line between the *imbecile* (not idiots or lunatics) and the *feeble minded*. Some of the latter are found in ordinary schools. A long and patient preliminary training in the

use of the ordinary senses is required for them, and some are so far raised by these means as to be able eventually to take their part in the ordinary affairs of life. But some special provision, at all events in towns, should be made for them in connection with our public elementary schools.

19 (a). *Night Schools*.—In the early days of the Act of 1870 these were looked upon as places where those who had passed the school age entirely untaught might have some opportunity of making good their deficiency. Indeed there was a strong disposition in some quarters to make them a substitute for day schools. A higher range is now required, some particulars of which will be found in Memorandum X in the Appendix. The last report states that 980 of these schools had been examined last year for a grant-in-aid. The number on the rolls was over 51,000, about 80 per cent. being between the ages of 14 and 20 years. Of these only 30,400 were presented for examination, and 95·57 per cent. passed in reading, 78·62 in writing, and only 54·62 per cent. in arithmetic. 342 schools only took up any “additional subject,” but less than two-thirds passed. Bearing in mind what a failure to “pass” means, this cannot be regarded as a very satisfactory result.

(b.) These schools only very partially supply the want which has long been felt for “continuing” schools, as they are aptly called, which should carry on, or at least preserve, the modicum of knowledge acquired up to the age of 12 or 14 years. The “Re-creative Evening School Association,” which is very influentially supported, has been actively engaged for some years past in bringing this subject before the public. Accounts of its proceedings will be found in its numerous reports, and its recommendations are open to discussion.

Those young people who mean to study in earnest will rather resort to such classes as those at the People’s Palace and the Polytechnic institutions which are now springing up in different quarters. The whole system, if so it can be called, is no doubt at present in a crude and transitory state, but I believe that no small amount of thoroughly good work is unostentatiously growing up throughout the country. We must avoid the error of aiming too low. Even if the object is to afford only amusement—and that in its degree is a most worthy object—it must be thoroughly good of its kind, and nothing good ever comes out of mere dilettante work, which may indeed establish popular schools, but will never be able to maintain them; and their inefficiency serves only to cumber up the road of progress.

The Reform and Refuge Union publish a list of reformatory schools, homes, &c., which provide for about 10,200 children in London, and 16,700 in the provinces.

The state of the children of the canal boat population, many of whom form a class apart, also demands attention, and with the prospective increase of inland navigation, this subject is one of growing importance.

20. *The Charity Commission*.—The last general return of the proceedings of this commission, under the Endowed Schools Act, was made on an order of the House of Lords (Lord Fortescue), dated August, 1883. It showed that in England and Wales, including the metropolis, 580 schemes had been passed, representing an annual income of 356,000*l.* Sixty-two schemes were in abeyance, representing over 111,000*l.* more; and 656, the income of which was given at about 160,000*l.*, had not been dealt with.

Table XV in the Appendix shows over 121,000*l.* added to the amount of schemes finally approved in 1882-88, but I have not been able to trace exactly what portion of these is included in the return just referred to. An aggregate of nearly 65,000*l.* is given for and after 1884. It shows also the distinction drawn by the commission between first, second, and third grade, and elementary schools respectively. But it would be useless to carry on my former detailed tabulation for counties and districts, in the face of the statement, in the Commissioners' Report of 1889, of the large number of charities which have been exempted from, or escaped the inquiries of former commissioners. Their register of "unreported charities" now amounts to 14,242, of which 428 were added in the past year, and this is still in manuscript. The "hope" that it would be published is expressed in their report of 1884, and they can now only add that "they have caused to be printed a full index of its contents . . . which is so arranged as to harmonise with that to the printed reports of the commission of 1818-37, and if presented to parliament will, they believe, tend to promote the ultimate publication of the information comprised in that register, so as to render it available to the public in some form or other . . ." "One definite step has been taken during the past year towards this end;" and they have been furnished with means "of conducting local inquiries into the present condition of charitable endowments in the county of Denbigh, with a view to the ultimate publication of the information to be thus acquired." The limited inquiries thus far made appear to justify the anticipations of their value.

Of course only a part of these charities will be applicable directly to education. The objects of the commission range from the foundation of scholarships in elementary schools, to aid granted for securing parks and open spaces, on the manifold advantages of which it is needless to dilate. For further particulars of its work

I must refer to its annual reports. It has extended its aid to Polytechnic institutions; to the People's Palace, with its various technical classes and workshops; to colleges for working men and women; to the movement for University extension; and while it has technical and commercial instruction chiefly in view, it does not ignore the claims of literature.

The *City and Guilds* Institute is a separate institution, but its work will no doubt be brought into due correlation with all that is now in progress in so many different directions.

One more point I may specially notice. The Charity Commissioners are always ready to act as "bare trustees," *i.e.*, to carry out strictly the obligations imposed by trust deeds already in force, without acquiring or assuming any powers beyond those vested in any other trustees. It assumes only their existing responsibilities, and thus solves a difficulty which is often severely felt in securing the permanent good management of public funds; and further, but again only by due process of law, they are in a position to facilitate changes which may hereafter become desirable in order to carry out the intentions of the trusts in which they are concerned; and these intentions embrace to a large extent provisions specially made for the benefit of elementary schools.

21. The need of medical inspection for schools has been frequently urged, and of late years we have heard a good deal of "over pressure." It prevails probably to the greatest extent in those higher class schools which prepare candidates for competitive examinations, but is not the less an error which should be carefully guarded against in public elementary schools. It depends however, among other things, not only on the subjects taught, but on the manner of teaching them.

A committee of the Psychological section of the *British Medical Association* was appointed in 1888 to inquire into "the physical development and brain condition of school children." It made its preliminary report last year, and is now carrying out further investigations on a larger scale. There has never yet been an opportunity of instituting such an inquiry on so adequate a basis as that now afforded by the large aggregation of children in our public elementary schools, and the movement deserves hearty support on the broadest grounds of public utility. No inconvenient interference with the course of school work is entailed by the examinations required. For the rest, let sound common sense have fair play. No one wants "the doctor" always in the school, any more than one wants him always in the house. But not the less do we all value his timely advice, and accept those conclusions of hygienic science which are founded on a wide range of professional observation. It must also be kept in mind that the object

is not to find excuses to keep a child away from the school, but on the contrary to devise means whereby those who are weighted by natural defects may be enabled, without detriment to their mental or physical health, to go through the course of instruction which is so essential to their well-being in after life.

22. In conclusion, I must make some reference to the reports of the Royal Commission on the Elementary Education Acts, England and Wales, 1886, though I can do little more than indicate very briefly the nature of its investigations. They present in their final report—

(1.) A series of questions inviting opinions on the Act, code, and the administration of public elementary schools, which was addressed to the managers of 4,816 voluntary schools and to 1,101 board schools, under 498 school boards, in the ten counties noted below.⁴ Replies were received from 78 per cent. of the former and 77 per cent. of the latter, which are elaborately set forth in their statistical report. Numerous comments were made, but about two-thirds stated generally that they were satisfied with the administration of the Act and codes. The inefficiency of compulsion was a point on which there was a very general agreement, but the existing bye-laws, and the recommendations of managers and teachers regarding them, differ very widely. Uniformity in all respects is neither to be expected nor desired; much depends on the efficiency of the provision made for supplementing the work of the ordinary schools. The whole subject of compulsion is one which calls for reconsideration.

(2.) A similar circular was sent to the head teachers of schools in the twelve districts under noted.⁵ Replies were received from 2,529 out of 3,130, differing considerably in their tenor. There are many free expressions of dissatisfaction at the working of the present system. Regarding the personal evidence taken, the final report (p. 2) has the following: "We have examined in all 20 head masters, 9 head mistresses, as well as assistant teachers and ex-teachers of public elementary schools. The remarkable solidary which characterised the testimony offered by these teachers did not fail to strike us. In many instances doubtless they expressed the views of a large and influential organisation of their professional brethren, whose carefully formulated opinions

⁴ Berkshire, Devon, Dorset, Durham, Gloucester, Kent, Lancashire, Leicester, Lincoln, and Stafford. Statistical Report, pp. 12—19 and 55—119; Final Report, pp. 400—411.

⁵ Yorkshire, W.R., Chelsea, Greenwich, Southwark, West Ham, Glamorgan, Merioneth, Birkenhead, Bedford, Sussex, Wells, Warwickshire. Statistical Report, pp. 20—25 and 121—73; Final Report, pp. 412—17.

“had been at an early stage of our inquiry placed in our hands.”

(3.) A report on drawing and science, founded on the replies given to a series of questions submitted to both the ten counties and the twelve districts, is also given.⁶

(4.) An elaborate statement of the general results of a comparison made between the voluntary and the board schools, with an average attendance of (a) less than 300, and (b) more than 300 children in 125 *boroughs and towns*; and as between these two classes of schools with an average attendance of (a) less than 100, and (b) more than 100 in 30 *unions*. These are referred to generally as “selected districts.”⁷

Also a similar statement drawn from the same returns of towns and boroughs for 27 “large,” 23 “medium,” and 15 smaller towns; and further from 54 towns where there were no school board schools.

A condensed abstract of these two investigations will be found in Table XIII in the Appendix, which may be further compared with the tables drawn from the annual returns of the Education Department of all the public elementary schools in England and Wales, bearing in mind that the summaries of the commission are based on the returns of the year 1884-85.

(5.) Returns regarding 43 training colleges on points specially connected with the work of these institutions, which are comprised in a separate volume, No. III.

(6.) An abstract, also of replies to a series of questions addressed regarding various systems of education on the continent, in some of our colonies, and in the United States, which does not run to any great length. These are termed “foreign returns.”⁸

(7.) A list of the recorded divisions of the commission since the commencement of its discussions, which in a succinct form throw much light on the nature of the divergent views held by its different members.⁹

(8.) There is also a great mass of evidence collected in three large volumes, published with the earlier formal reports, which thus merely reported progress in this direction. They extend over a very wide range, and afford ample materials for further investigation; but as was stated in the earlier part of this paper, the opinions deduced from them by the commissioners differed so much on

⁶ Statistical Report, pp. 27—31; Final Report, pp. 419—23.

⁷ Statistical Report, boroughs, pp. 33—35 and 175—427; Final Report, pp. 425—27. Statistical Report, unions, pp. 36 and 37, and 428—87; Final Report, pp. 428 and 429. Statistical Report, large, &c., towns, pp. 39—46; Final Report, pp. 431—38.

⁸ Statistical Report, pp. 47—53; Final Report, pp. 439—45.

⁹ Final Report, pp. 446—48.

many important matters, that separate reports were presented by them, and on these issue will be joined hereafter.¹⁰

(9.) I may here give a short summary, drawn from the Final Report (C-IV, p. 71, *et seq.*), of the constitution of the *staff* of inspectors working under the Education Department.

This staff consists of three grades, viz.:—

12 chief inspectors, each of whom has a district of his own.

2 in charge of training colleges.

10 with a general supervision of as many school divisions of England and Wales, each comprising ten or twelve districts.

120 inspectors, almost all of whom are in charge of independent districts.

30 sub-inspectors.

152 inspectors' assistants.

In addition “21 examiners, all high class university men, are occupied in the Education Department in examining the reports of the inspectors, in assessing the grants to be paid on these reports, in the revision of papers, and in carrying on, under the supervision of the secretaries, the enormous correspondence of the Department arising out of the administration of the Code and the Acts.”

The Department (wisely as the commissioners think) declined to adopt the suggestion that one of H.M.'s inspectors should be an assistant secretary to advise on questions arising out of the work of inspection, adding that “there is, however, possibly no reason why a vacancy in the secretariat should not be filled by the appointment of an inspector.”

All members of the inspecting staff (*i.e.*, H.M.'s inspectors) must at the date of their appointment be 25 to 35 years of age, are nominated by the Lord President of the Council, and are appointed direct to their office. “The only formal qualifications hitherto exacted for appointment have been a university degree, and, as a rule, a first or second class obtained in honours.”

Sub-inspectors are recruited entirely out of the assistants, and the latter are selected out of the ranks of elementary teachers. They must be 30 to 35 years of age at the date of their appointment, have taken a first class in the certificate examination after a two years' course of training, and must have been head teachers in a public elementary school; a preference being given to those who have taken a university degree.

¹⁰ Note at the end of Appendix. Names of the Commissioners appointed. Contents of the ten volumes, comprising their reports, evidence, and returns in full.

23. On some of these points only will I venture to add a few closing observations.

The very large number of different classes in our public elementary schools, carried on under diverse conditions in all parts of the country, entails a special difficulty in their management, but it is one which cannot be evaded, but must be met by appropriate organisation. The great increase of population imposes a higher standard of work and of civilisation on the nation at large. There are no longer waste places and simple rough work for those who will not accept this condition, either at home or in the colonies.

Much has been said of the superiority of continental schools, and we do well to study them; but there are several points to be remembered in instituting a comparison with them. 1st. We have no such thorough knowledge of these schools, as a whole, as we have of our own. Naturally we see their best, and know little of their shortcomings. 2nd. There is the difference in national habits and in national characteristics of which we have no reason to be ashamed. Self help on our own lines, not government help as on theirs, is what we desire to extend and to develop. 3rd. There is an inevitable difference in the way in which the organised work of a highly centralised system, and of one which relies upon local and individual energy, subject only to adequate supervision on behalf of the State, will be inevitably represented. In the former case credit will certainly be taken for all methods which are ordained by the ruling authority, and of the success of which it is *ex hypothesi* already fully assured. They work indeed "under very different" guarantees from those which would subsist in this country if all "voluntary managers were practically secure of a fixed subsidy" irrespective of their own contributions, and of the efficiency of "their schools." (Report, p. 331.)

Under our English system far less is taken for granted. Different expedients, which are undergoing the test of experiment, are viewed with a more impartial mind, and those charged with the duty of supervision bring a wider range of well tested experience to bear upon their recommendations. Outside official circles there is a vast amount of local energy and capacity joined with a sense of responsibility, which are the highest qualifications for what is most truly public service, but in our closely-knit civilisation the strength and mobility which these qualities afford must be correlated in order to maintain that unity of purpose which is needed to avoid waste and confusion, and thus give validity to all practical adaptations of local means to local ends. What is required is the hearty co-operation of all who are engaged in the common cause of education.

Many complaints are made of the methods of school examina-

tion. The whole problem of examination tests generally is one of difficulty, and concerns all classes of society, and especially those who seek entry into the public services. The subject is not one that is likely to suffer from want of attention. The work is no doubt one for which not only high but appropriate qualifications should be strictly required; and as teachers have to be taught the art of teaching, so there is a growing feeling that the examiners themselves should first be taught the art of examining.

As to the best method of inspecting and examining public elementary schools I will not venture to offer an opinion, but that the test applied should be searching and thorough, and extend to all classes in them, is absolutely required in the interests of the country at large. We cannot forget the evidence of the Newcastle commission. The schools were few, and filled from a comparatively select class, their teachers were all honourable men, and the reports generally were of the most satisfactory kind. Yet a weight of evidence which cannot be ignored showed how as a rule instruction was successfully given only to the higher classes in them.

How far the test of individual examination should affect the grant-in-aid may be open to question. It now does so indirectly to the extent of nearly 41 per cent. (see Table VI). But that there is no need of the careful application of this test to enable an inspector to judge how far instruction has been carried on throughout any school is a contention which cannot be maintained. It was always required in terms, though the wearisome work of applying it had become practically a dead letter before part of the grant-in-aid was made dependent upon it. No substitute which does not entail greater inconvenience, or open wide the door to deplorable laxity, has yet been devised. It is, however, quite contrary to the spirit of the Act of 1870, that the teachers' remuneration should depend on the amount of the Government grant paid to the managers of public elementary schools.

Every branch of the public service, and indeed also of organised private enterprise, is subjected to tests of even greater stringency. They are not perfect, nor are they always agreeable, but the necessity of them is universally recognised.

It were well to know what conception of education those have in mind who would have us trust entirely to better equipment and a more advanced curriculum in public elementary schools. Are they thinking of the few or of the many? and do their recommendations duly take in the double duty which devolves upon these primary schools? Beyond them, but closely associated with them are, and will before long be in greater number, schools of a higher grade. The great object at which to aim is to devise the means by which the early training common to all may be best

suited to the future wants of all alike. More advanced and specialised training will not suffer from the timely cultivation of the simple faculties of observation which first come into activity: rather indeed will it benefit in a larger degree by following the course which is so clearly indicated by nature.

Knowing well how many teachers there are whose hearts are in their work, I feel assured that this vexed question will be fairly met. The wider range of the daily experience of the inspector, the more exact and personal knowledge of the teacher, should form a common fund by which both may equally be enriched; and I look forward with hope to the time when inspectors and the inspected will heartily co-operate in carrying out the great work to which they have dedicated their lives.

The dignity and importance of this work can hardly be over estimated. The number of children in our public elementary schools is manifold larger than that in all other schools put together, but none are more vitally concerned in every step that connects them with the higher culture which is open to all endowed with the capacity to receive it. Such culture does not "level men's wits," but it does tend to bind together all sections of society as the inseparable community of their several interests is more fully realised.

APPENDIX.

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I A.—*Memorandum of Code of 1882.*

(Applied to schools inspected on or after 3rd April, 1883.)

The following grants are allowed, subject to the annual inspection of H.M.'s Inspectors :—

TO ELDER CHILDREN (*Paid on the “Average Attendance”*).

Art. 109. Fixed grant, 4s. 6d. per scholar.

Merit grant on the report of H.M.'s Inspector of the school; if as “excellent” 3s., “good” 2s., “fair” 1s. per scholar.

For singing, if taught by note, 1s.; if by ear only, 6d. per scholar.

For needlework, if taught according to schedule, 1s. (Girls) per scholar.

On examination in elementary subjects (the three R's), on the percentage of papers "at the rate of one penny for every unit of "percentage per scholar." [See Schedule I.]

[The working of this clause is that if all the scholars passed completely, the grant would be 100 pence = 8s. 4d.; 96 per cent. would earn 8s.; 90 per cent. 7s. 6d.; and so on. It is paid however not on the number *examined*, but on the number in "*average attendance*."]]

On examination on class subjects (not more than two), of 2s., or 1s. each child, on H.M.'s Inspector's report on the class examination as "good" or "fair." The class subjects are English—Geography, Elementary Science, or History—or for girls, Needlework, according to 3 Schedule, *i.e.*, on a higher standard than that required for girls in all schools.

All scholars whose names have been on the register for the last twenty-two weeks that the school has been open to be presented and examined, unless reasonable excuse be given for exemption.

TO INFANTS UNDER 7 YEARS OLD.

Art. 106.—If taught by a certificated teacher as a separate department, 9s.; if taught as a class, 7s. per child.

For needlework, 1s.; singing by note, 1s.; or ear, 6d.

Further, a *Merit Grant*, on the Report of H.M.'s Inspector on the school, if as "excellent," 6s.; as "good," 4s.; as "fair," 2s.

All names on the Registers for the last twenty-two weeks that the school has been opened, unless there is a reasonable excuse for their absence.

These several grants are also made on the numbers in "average attendance."

SPECIFIC SUBJECTS.

The grant for these subjects remains as before, 4s. per scholar on individual examination. These may be taken up only by those in the V, VI, and VII standards. None may be presented in any school in which, *at the last preceding* inspection, the percentage in elementary subjects was less than 70 per cent.

I (B.) SCHEDULE I.—Standards of Examination in the Elementary Subjects, Article 109 (e).

	Standard I.	Standard II.	Standard III.	Standard IV.	Standard V.	Standard VI.	Standard VII.
* Reading	To read a short paragraph from a book not confined to words of one syllable.	To read a short paragraph from an elementary reading book.	To read a passage from a more advanced reading book, or from stories from English history.	To read a few lines from a reading book, or history of England.	To read a passage from some standard author, or from a history of England.	To read a passage from one of Shakespeare's historical plays, or from some other standard author, or from a history of England.	To read a passage from Shakespeare or Milton, or from some other standard author, or from a history of England.
† Writing	Copy in manuscript characters a line of print, and write from dictation not more than ten easy words, commencing with capital letters. Copy books (large or half text hand) to be shown.	A passage of not more than six lines, from the same book, slowly read once, and then dictated. Copy books (capitals and figures, large and small hand) to be shown.	Six lines from one of the reading books of the Standard, slowly read once, and then dictated. Copy books (capitals and figures, large and small hand) to be shown.	Eight lines of poetry or prose, slowly read once, and then dictated. Copy books to be shown.	Writing from memory the substance of a short story read out twice; spelling, handwriting, and correct expression to be considered. Copy books to be shown.	A short theme or letter on an easy subject; spelling, handwriting, and composition to be considered. Copy books to be shown.	A theme or letter. Composition, spelling, and handwriting to be considered. Note books and exercise books to be shown.
†† Arithmetic	Notation and numeration up to 1,000. Simple addition and subtraction of numbers of not more than three figures. In that of boys, addition not more than five lines to be given. The multiplication table to 6 times 12.	Notation and numeration up to 100,000. The four simple rules to short division. The multiplication table and the pence table to 12s.	The former rules, with long division. Addition and subtraction of money.	Compound rules (money) and reduction of common weights and measures. §	Practice, bills of parcels, and single rule of three by the method of unity. Addition and subtraction of proper fractions, with denominators not exceeding 10.	Fractions, vulgar and decimal; simple proportion, and simple interest.	Compound proportion, averages, and percentages.

Short exercises in mental arithmetic may be given in the examination of all Standards. These should not involve large numbers, and should be preparatory to the work of the next higher Standard.

* Reading with intelligence will be required in all the Standards, and increased fluency and expression in successive years. Two sets of reading books must be provided for Standards I, and II, and III, one of which should relate to English history, for each Standard above the second. The Inspector may examine from any of the books in use in the Standard.

† The writing and arithmetic of Standards I and II may be on slates or paper, at the discretion of the Managers; in Standard III and upwards it must be on paper.

†† The Inspector may examine scholars in the work of any Standard lower than that in which they are presented.

§ The tables to be learned include those weights and measures only which are in ordinary use, viz. :—

Weight.—The ton, hundredweight, quarter, stone, pound, ounce, and drachm. *Length*.—The mile, furlong, rod or pole, chain, yard, foot, and inch. *Area*.—The square mile, acre, rood, pole or perch, the square yard, foot, and inch. *Capacity*.—Quarter, bushel, peck, gallon, quart, and pint. *Time*.—Year, month, week, day, hour, minute, and second.

TABLE II.—*Showing the Increase of Voluntary and Board Schools under Inspection as Public Elementary Schools.**

[Continued from Table V, "Journal of the Statistical Society," June, 1883.]

Voluntary Schools.			School Boards.			Total.			Increase (a.a.) since	
Year Ending 31st August.	Schools.	Depart- ments.	Children on Registers. [000's omitted.]	Schools.	Depart- menta.	Children on Registers. [000's omitted.]	Schools.	Depart- ments.		
										On Registers.	Children in Average Attendance.
						[000's omitted.]				
1882....	14,421	20,139	2,884,	3,868	6,640	1,306,	18,289	26,779	3,015,	1872, 10 years, 125.5 per cent.
'85....	14,600	20,726	2,859,	4,295	7,630	1,553,	18,895	28,356	3,371,	'82, 3 " 11.8 "
'88...	14,659	20,802	2,908,	4,562	8,254	1,780,	19,221	29,056	3,615,	'82, 6 " 19.9 "

The proportion of children in a.a. to the number on the registers was about 72 per cent. in 1882, 76 per cent. in 1885, and 77 per cent. in 1888. Increase on registers (six years) 12 per cent. Estimated increase in number of children of school age since 1882, 8 per cent.

Note.—The *average number* of children in average attendance in voluntary and school board "schools" and departments respectively is:—

Average Size of Schools,	1882.			1885.			1888.			Increase, 1882-88 (6 years).	
	School.	In each Department.	Total Average Attendance.	School.	In each Department.	Total Average Attendance.	School.	In each Department.	Total Average Attendance.	Average Attendance.	On Registers. Numbers as Above.
Voluntary ...	144	102	[000's omitted] 2,070,	150	105	[000's omitted] 2,184,	152	108	[000's omitted] 2,237,	Per cent. 8	Per cent. 1
School board	244	142	945,	276	156	1,187,	302	167	1,378,	46	36
Gen. average	—	—	—	—	—	—	—	—	—	20	12

The proportion of children in a.a. to the number on the registers was about 72 per cent. in 1882, 76 per cent. in 1885, and 77 per cent. in 1888. Increase on registers (six years) 12 per cent. Estimated increase in number of children of school age since 1882, 8 per cent.

Note.—The average number of children in average attendance in voluntary and school board "schools" and departments respectively is:—

* A "school" is an institution under one general management, but there may be one head teacher for boys, girls, and infants (one department), or one for boys and girls and another for infants (two departments), or independent teachers for boys, girls, and infants

TABLE IIIA.—*Showing Number and Percentage of Children of all Ages on the Registers of Inspected Public Elementary Schools according to Ages, in Triennial Periods, for Years ending 31st August.*

Compiled from the Annual Returns (Table 1A) of the Education Department. See Table III of 1883.)

[000's omitted.]

	Infants.				Older Scholars.							Total.	In-crease on 1879.
	Under 4.	4—5.	5—6.	6—7.	7—8.	8—9.	9—10.	10—11.	11—12.	12—13.	Over 13.		
No.	128,	262,	381,	436,	428,	433,	424,	411,	360,	279,	169,	3,711,	
Percentage	3'46	7'06	10'28	11'76	11'53	11'66	11'42	11'07	9'69	7'52	4'55	100	Per ct.
No.	135,	281,	420,	478,	499,	490,	487,	457,	415,	323,	205,	4,190,	12'9
Percentage	3'22	6'72	10'02	11'42	11'91	11'69	11'61	10'90	9'92	7'71	4'88	100	
No.	137,	290,	441,	503,	519,	527,	518,	505,	446,	345,	181,	4,412,*	18'8
Percentage	3'09	6'58	10'00	11'40	11'77	11'95	11'74	11'45	10'11	7'81	4'10	100	
No.	140,	308,	477,	536,	541,	542,	545,	535,	492,	372,	199,	4,687,*	26'3
Percentage	2'98	6'57	10'18	11'43	11'54	11'57	11'64	11'4	10'49	7'94	4'24	100	

Calculated from 1882 the increase is about $5\frac{1}{4}$ per cent. in 1885, and 12 per cent. in 1888. The increase in population being about 8 per cent. in the same period.

Table 18 in the returns of the Department gives the number for 1885 and 1888 as 4,468,000, 4,714,000 respectively. The slight differences arising in the rendering of the accounts is equally distributed as to cause no appreciable difference in the proportions given.

TABLE III.—*Showing the Ages of Children on the Registers of Inspected Schools; also the Numbers and Proportion of those in Average Attendance and Present at the Annual Inspection.*

[000's omitted.]

	Ages.		Total Infants.	Ages.			Total Elder Children.	Totals all Ages.		
	Under 5.	5 to 7.		7—10.	10—13.	13 and Over.		On Register.	In Average Attendance.	Present at Inspection.*
No.	416,	899,	1,315,	1,475,	1,195,	205,	2,875,	4,190,	3,015,	3,543,
Percentage	9'94	21'44	31'38	35'21	28'53	4'88	68'62	100	72	84
No.	427,	944,	1,371,	1,564,	1,296,	181,	3,041,	4,412,	3,371,	3,992,
Percentage	9'67	21'40	31'07	35'46	29'37	4'10	68'93	100	76	90
No.	448,	1,013,	1,461,	1,629,	1,399,	199,	3,226,	4,687,	3,615,	4,233,
Percentage	9'55	21'61	31'16	34'75	29'85	4'24	68'84	100	77	90

All on the registers should be present on the day of examination (Art. 109 e) for inspection, unless there is a reasonable excuse for their absence."

Increase on infants, 12'8 per cent.; on older scholars, 12'2 per cent. by the registers; the average attendance of infants appears to have increased in rather the larger proportion.

TABLE IV A.—*Showing Number and Proportion of Children over 10 Years Old, presented in Standards I to III.*

(Continued from Table 2c in Paper of 1883.)

	Total Examined in Standards.	Number over 10 Years.	Proportion over 10 Years to those under 10 Years Examined in Standards I—III.	Proportion of all Ages Examined in Standards IV—VI and IV—VII.	Standards.
	[000's omitted.]				
1882	2,119,	1,063,	44·96 p. cent.	28·26 p. cent.	IV— VI } IV—VII
'85	2,379,	1,267,	44·80 "	32·90 "	
'88	2,547,	1,396,	39·50 "	37·45 "	

B.—The number of children examined in Standards I to IV over 10 years old, for the years 1882, 1885, and 1888, is returned as follows:—

(Continued from Table 2 F in Paper of 1883.)

[000's omitted in number columns.]

Year.	Standard I.			Standard II.			Standard III.			Standard IV.		
	Over 10.			Over 10.			Over 10.			Over 10.		
	Total.	Num- ber.	Propor- tion.	Total.	Num- ber.	Propor- tion.	Total.	Num- ber.	Propor- tion.	Total.	Num- ber.	Propor- tion.
1882	570,	50,	8·8	506,	147,	29	445,	274,*	60*	347,	339,	97·7
'85	486,	46,	9·5	580,	146,	25	530,	302,	57	430,	420,	98·0
'88	495,	38,	7·6	561,	124,	22	537,	290,	54	481,	472,	98·0

* These figures were wrongly given in 1883, and are now corrected.

Over the IV Standard, presentation before 10 years old should properly be the exception.

C.—*Showing the Number and the Proportion of Elder Children presented for Examination in Elementary Subjects according to the several Standards of the Codes.*

[000's omitted.]

Standard	I.	II.	III.	IV.	V.	VI.	VII.	Total.
1879 No.	556,	460,	355,	231,	115,	42,	6,*	1,760,
Per cent.	31·5	26·1	20·5	13·1	6·5	2·4	0·03	100
'82 No.	569,	506,	445,	346,	184,	68,	10,*	2,119,
Per cent.	26·9	23·9	20·9	16·4	8·7	3·2	0·05	100
'85 No.	486,	580,	530,	430,	240,	91,	21,	2,379,
Per cent.	20·4	24·4	22·4	18·1	10·0	3·8	0·09	100
'88 No.	496,	561,	537,	481,	309,	128,	36,	2,548,
Per cent.	19·5	22·0	21·0	19·0	12·1	5·0	1·4	100

* Returned as Standard ex VI in Table 14 of the annual returns of the department.

Calculated from 1882, the total increase is 124 per cent. in 1885, and 20 per cent. in (six years) to 1888; the increase in population being about 8 per cent.

The larger proportion presented in the higher standards is a fair test of improvement.

D.—*Memorandum showing the Proportion of those who have Passed completely in Elementary Subjects according to the Standards of the Codes.*

	I.	II.	III.	IV.	V.	VI.	VII.
1879 Passed in all 3 subjects pr. cent.	63·30	65·75	59·29	56·11	56·89	57·33	—
'82 " "	69·30	69·48	65·20	57·98	60·32	61·41	—
'85 " "	72·91	73·83	67·05	61·47	59·32	63·03	69·58
'88 " "	78·75	79·87	73·68	66·28	65·99	65·07	75·01

The aggregate passes in the three elementary subjects were:—

1879. Reading, 87·53; writing, 80·08; arithmetic, 73·87 per cent.

'82. " 89·22; " 81·92; " 77·27 "

'85. " 91·86; " 83·83; " 79·84 "

'88. " 93·45; " 86·51; " 84·46 " [Over.

IV E.—*Class Subjects.* The returns show for—

1882. (Art. 19, c1 and c6). 17,855 departments with 1,879,000 children in average attendance, took up one or more of these subjects.

1888. (Art. 109f.) 20,041 departments, with 2,463,000 children in average attendance, took up one subject in 4,242 departments; two subjects in 11,733 departments; three subjects in 4,023 departments; four subjects in 43 departments. The grant was refused to 787 departments, and class subjects not attempted in 2,284 departments.

On average attendance the increase shown is about 30 per cent. in numbers, and a decided increase also in the subjects taken up.

TABLE V.—*Statement showing the Payments Made under the MERIT GRANT Code, Art. 106b and 109b, for Infants and Older Scholars respectively.*

Note.—1884 is the first complete year in which this grant came fully into operation.

INFANTS.						
Years.	Schools or Classes.	Average Number.	Total Number. (Average Attendance.)	Amount of Grant.	Proportion of Schools or Classes.	
				s.	Per cent.	£
	4,616	48	221,587	2	33.0	22,159
	6,676	76	505,692	4	47.6	101,138
	1,744	123	215,502	6	12.4	64,650
	974	38	37,075	Nil	7.0	Nil
1884....	14,010	—	979,856	—	100.0	187,947
				s.		£
	2,711	55	149,299	2	22.6	14,930
	6,399	82	528,748	4	53.2	105,750
	2,563	145	371,594	6	21.4	111,478
	333	47	15,657	Nil	2.8	Nil
1888....	12,006	—	1,065,298	—	100.0	232,158
OLDER CHILDREN.						
				s.		£
	6,496	87	564,674	1	30.0	28,234
	10,586	112	1,184,900	2	49.0	118,490
	3,133	146	456,229	3	14.5	68,434
	1,403	76	107,553	Nil	6.5	Nil
1884....	21,618	—	2,313,356	—	100.0	215,158
				s.		£
	5,300	82	435,428	1	23.8	21,771
	11,746	116	1,362,404	2	52.6	136,240
	4,296	165	708,508	3	19.2	106,276
	983	66	64,777	Nil	4.4	Nil
1888....	22,325	—	2,571,117	—	100.0	264,287

The increase for infants is about 8.7 per cent. in number and 17 $\frac{3}{4}$ per cent. in amount.

The increase for older scholars 11.12 per cent. in number and 22.8 per cent. in amount. For four years in both cases.

VI.—*Abstract exemplifying the Distribution of Annual Grants in Aid.
Summarised from the Official Reports.*

	[000's omitted.]		
	£	£	£
Total Grant in Aid, for the year 1888.....			3,201,
SPECIAL GRANT for pupil teachers, at 40s. to 60s. (Art. 110)	37,7		
„ to schools in small places (Art. 111)	31,4		
			69,
To INFANT SCHOOLS (Art. 106)—			
Claimed on average attendance of 1,065,000— £ Per cent.			
Fixed grant, 1,016,000 at 9s.*.....	457,		
„ 49,000 „ 7s.	17,		
		59'4	474,
Merit grant at 2s., 4s., and 6s., see Mem. No. 9	29'1	232,	
Needlework, 477,000 boys, 499,000 girls = 976,000 } at 1s.	6'2	49,	
Singing 820,000 by note at 1s., 444,000 by ear 6d.	5'3	42,	
			£797,
	100'0		

Average grant 14s. 11½d. per head.

* Accorded only if satisfactory arrangements are made for the special instruction of infants.

To OLDER SCHOLARS (Art. 109)—

Claimed on average attendance of 1,360,000 boys,
1,211,000 girls (including about 25,000 honour
certificates) = 2,571,000—

	Per cent.	£
Fixed grant at 4s. 6d.	25'00	579,
Merit grant at 1s., 2s., and 3s., see Mem. No. 9	11'40	264,
Class subjects, 976,000 at 1s.	17'40	402,
„ 3,529,000 at 2s.		
Needlework (girls), 441,000 at 1s.	0'95	22,
Singing, 1,530,000 by note at 1s., 76,000l. ; } 1,037,000 by ear 6d., 26,000l. =	4'40	102,
Elementary subjects ("three R's") at 88¼ } per cent. = 7s. 4½d.	40'85	945,
		2,314,
	100'00	

Average per head 18s.

For SPECIFIC SUBJECTS (109g of the Code)—

On individual examination (V, VI, and VII
standards only)—

On various subjects (see Table VII) 62,000 at 4s.	12,4		
For cookery, to classes satisfactorily taught at 4s.	8,4	21,	
			3,201,

These grants average 1¼d. to ¾d. a-head on aggregate school attendance.

The average of the entire grant is 17s. 7¼d. per head, subject to deduction
for defects in buildings, staff, &c. 2¼d.

Net average grant..... 17s. 5d. per head.

Viz., special grants, 69,000l. or 2'15 per cent. To infant schools, 797,000l. or 24'90 per cent. To older scholars, 2,314,000l. or 72'30 per cent. For specific subjects, 21,000l. or 0'65 per cent.

VII.—Number of Children in Standards V, VI, and VII (1) Examined and (2) Passed in "Specific Subjects." (Code, Art. 109g and Schedule IV.) Grant 4s. for each Pass.

(Classed according to the numbers by whom they are taken.)

1		2		3		4				5		6	
Algebra.		Domestic Economy. Girls.		Animal Physiology.		Mechanics.				French.		Magnetism and Electricity.	
Examined.	Passed.	Examined.	Passed.	Examined.	Passed.	Scheme A.		Scheme B.		Examined.	Passed.	Examined.	Passed.
787	15,973	21,458	13,676	22,857	15,589	3,174	2,183	206	171	5,007	3,093	3,244	2,269
347	16,132	19,437	12,438	20,869	14,168	3,527	2,469	239	145	5,178	2,871	2,864	2,045
393	16,702	19,556	12,879	18,523	12,957	4,844	3,259	128	82	5,038	3,080	2,951	2,032
103	17,162	20,716	14,250	17,338	12,480	6,315	4,267	33	28	5,519	3,283	2,250	1,648
448	18,658	20,787	14,840	16,940	12,611	6,961	4,777	331	258	6,089	4,141	1,977	1,388
—	Per cent. 70½	—	Per cent. 71·4	—	Per cent. 74·4	—	Per cent. 62·2	—	Per cent. 78	—	Per cent. 69	—	Per cent. 70

7		8		9		10		11		12		13		Total Number of Children Examined in Elementary Subjects in V, VI, and VII Standards.
Chemistry.		Botany.		Principles of Agriculture.		Euclid and Mensuration.		Sound, Light, and Heat.		Latin.		Other Subjects.		
Examined.	Passed.	Examined.	Passed.	Examined.	Passed.	Examined.	Passed.	Examined.	Passed.	Examined.	Passed.	Examined.	Passed.	
047	684	2,604	1,828	1,859	1,256	2,010	1,095	1,253	735	454	267	20	15	324,000
095	705	2,415	1,654	1,481	1,103	1,269	756	1,231	850	365	221	112	57	353,000
158	812	1,992	1,428	1,351	1,022	1,247	769	1,334	859	342	224	414	236	393,000
488	1,077	1,589	1,201	1,137	888	995	621	1,158	746	363	216	413	302	423,000
808	1,374	1,598	1,215	1,151	830	1,006	625	978	627	371	269	640	421	473,000
—	Per cent. 76	—	Per cent. 76	—	Per cent. 72·1	—	Per cent. 62·1	—	Per cent. 64·1	—	Per cent. 72·5	—	Per cent. 65·8	—

total passes in 1888, 62,034; grant paid on individual examination.

The scheme for these examinations was introduced by the Minute of the Education Department dated 6th March, 1882, and came only into partial operation in 1883. No grant is accorded for the aggregate passes in elementary subjects amount to not less than 70 per cent. Only in V, VI, and VII Standards can be presented. Not more than two "subjects" may be up. The column (13) "Other Subjects" includes "any other subject sanctioned by the Department, provided that a graduated scheme of teaching is submitted to and approved by the Inspector."

The number of *individuals* therefore will be less than the total, 87,085, examined. Table 17 gives the number of "scholars individually examined in higher subjects" as in 1884, 66,634; 1885, 66,376; 1886, 64,924; 1887, 66,574; 1888, 69,439, which are approximately applicable. *Cookery* also is treated as a *specific* subject. A grant (also 4s.) is paid where approved provision is made for its practical teaching to girls over 12 years old. Art. 109g IX, and 109h (1887). The total amount of these grants is paid on the number in the *classes* presented.

The approximate amounts were as follows:—

	1884.	1885.	1886.	1887.	1888.
	£	£	£	£	£
Subjects as above, including cookery*	13,246*	14,623*	11,517	11,661	12,306
Cookery only (109h)	—	—	4,905	6,086	8,274
	—	—	16,422	16,747	20,580

TABLE VIII.—TEACHING STAFF. *Abstract of Returns showing the Numbers, Sex, and position of those Employed in Public Elementary Schools.*

(Compiled from the Annual Returns of the Education Department.)

	1		2		3	
	Certificated Teachers.					
	Trained.				Total Trained.	
	Less than Two Years.		Two Years and Over.			
	Males.	Females.	Males.	Females.	Males.	Females.
1882....	1,315	1,234	8,957	8,891	10,272	10,125
'85....	1,113	1,153	10,174	10,218	11,287	11,371
'88....	961	938	11,174	11,110	12,135	12,048

	4		5		6		7
	Certificated Teachers—Contd.		Total Certificated.		Assistant Teachers.		Female Assistants.
	Untrained.						
	Including a few Provisionally Certificated.		Males.	Females.	Males.	Females.	
1882....	4,477	10,570	14,749	20,695	3,339	6,732	2,603 art. 32c
'85....	5,026	13,022	16,313	24,393	5,104	11,514	4,292 „ 84
'88....	5,699	14,683	17,834	26,731	5,152	13,994	4,972 „ 84

	Males.	Females.	Total.	Proportion of Males and Females.
Total certificated teachers, 1882	14,749	20,695	35,444	41·6 58·4 = 100
„ '88	17,834	26,731	44,565	40·0 60·0 = 100
Increase in 1888	3,085	6,036	9,121	—
Percentage on '82	20·9	29·1	25·7	—
Of these :				
Untrained teachers 1882	4,477	10,570	15,047	29·7 70·3 = 100
„ '88	5,699	14,683	20,382	28·0 72·0 = 100
Increase in 1888	1,222	4,113	5,335	—
Percentage on '82	27·3	43·0	38·4	—

	Males Trained for			Females Trained for			Total Males and Females.
	Under Two Years.	Over Two Years.	Total.	Under Two Years.	Over Two Years.	Total.	
Trained teachers, 1882	1,315	8,957	10,272	1,234	8,891	10,125	20,397
„ '88	961	11,174	12,135	938	11,110	12,048	24,183
Difference 1888	— 354	+ 2,217	+ 1,863	— 296	+ 2,216	+ 1,923	+ 3,786
Percentage on '82	— 26·9	+ 24·8	+ 18·1	— 24·0	+ 25·0	+ 19·0	+ 18·6

[Over.

TABLE VIII—*Contd.*

	Increase.	Untrained.	Trained.
Females	6,036	4,113 = 68 per cent.	1,923 = 32 per cent.
Males	3,085	1,222 = 40 „	1,863 = 60 „

Assistant Teachers.

	Males.	Females.	Total.
Number in 1882	3,339	6,732	10,071
„ '88	5,152	13,994	19,146
Increase in 1888	1,813	7,262	9,075
Percentage on 1882	54·3	107·9	90·1

Pupil Teachers.

The aggregate numbers (Table 17) given are:—

1882, 28,285; 1885, 25,750; 1888, 29,901.

Number of Pupil Teachers serving in 1888 at the end of their

(Table 2A.)

	Fourth Year.	Third Year.	Second Year.	First Year.	First to Third Year. (Apprenticeship continued.)	Total First to Fourth Years.
Males.....	1,594	1,936	2,090	1,747	5,773	7,367
Females.....	4,750	5,210	5,573	4,381	15,164	19,914
	6,344	7,146	7,663	6,128	20,937	27,281

Agreements with pupil teachers may be for two to four years; their renewal on the fourth year affords a presumption that they are fitted for and will enter upon the profession of teaching, subject to passing their final examination.

The proportion of the sexes is about 28 males to 72 females.

Summary of Total School Staff Engaged, 1888 and 1882.

	Males.		Females.		Total.	
	1888.	1882.	1888.	1882.	1888.	1882.
Teachers, trained	12,135	10,272	12,048	10,125	24,183	20,397
„ untrained	5,699	4,477	14,683	10,570	20,382	15,047
Total certificated	17,834	14,749	26,731	20,695	44,565	35,444
Assistant teachers	5,152	3,339	13,994	6,732	19,146	10,071
Pupil teachers (about)	8,400	9,000	21,500	19,000	29,900	28,000
Female assistants	—	—	4,972	2,603	4,972	2,603
Probationary candidates ...	549	131	1,269	183	1,818	314
Total	31,935	27,219	68,466	49,213	100,401	76,432

IX.—*Memorandum of Schools Examined for “Certificates of Efficiency” under the Elementary Education Act of 1876. Sec. 48.*

[From the returns of the Education Department.]

	Number of Separate Departments.	[00's omitted.]				Number of Teachers.		
		Number on Registers.			Average Attendance.	Certificated.	Not Certificated.	Total.
		Under 7.	Over 7.	Total.				
1882	418	6,8	14,2	21,0	15,6	127	300	427
'85	367	12,5	6,3	18,8	13,9	106	265	371
'88	336	11,3	5,3	16,6	12,5	102	236	338

The numbers passed in the “three R’s” were 8,177, 8,111, and 7,639 for the three years respectively, but it is not stated in what standard they were examined.

The total is but little over $\frac{1}{2}$ per cent. of the number of children in schools earning the grant-in-aid.

The section of the Act referred to provides that: “The term “ ‘certified efficient school’ in this Act means a public elementary school, and any workhouse school certified to be efficient by the “Local Government Board . . . and also any elementary school “which is not conducted for private profit, and is open at all “reasonable times to the inspection of Her Majesty’s inspectors, “and requires the like attendance from its scholars as is required “in a public elementary school, and keeps such registers of those “attendances as may be for the time required by the education “department, and is certified by the education department to be “an efficient school.”

X.—*Memorandum regarding Night Schools.*

Since 1883 the terms on which the grant is given were materially changed. No scholar may be presented in elementary subjects in a lower standard than III.

	1885.	1888.	Grants.
Ages on Registers—			
Under 14 years	5,997	8,473	For school opened for 45 hours, 4s. per head
14 to 20:	32,723	40,355	
Over 21	2,134	2,510	For school opened for 60 hours, 6s. per head
Total on registers	40,854	51,338	For elementary subjects, for each pass 2s. per head
Examined in “3 R’s,” } Standard III and VII }	29,989	30,405	
Average papers in ditto....	16,041	23,190	For additional, specific, or class subjects, not exceeding two, for each pass 2s. each
In additional class or } specific subjects	5,222	9,230	

TABLE XIA.—*Abstract Summary of INCOME of Public Elementary Schools Inspected for the Annual Grant.*

[000's omitted.]

	For Ten Years, 1879-88.			For the Year 1888 only.		
	£	£	Per cent.	£	£	Per cent.
1. Endowments	1,529,			165,		
2. Voluntary contributions	7,387,			746,		
	—	8,916,	14·8	—	911,	12·8
3. Rates		9,403,	15·6		1,232,	17·2
4. "Other sources"		161,	1·1		80,	1·1
Local sources (other than } school pence)		19,000,	31·5		2,223,	31·1
5. Government grants		24,750,	41·0		3,069,	42·9
		43,750,	72·5		5,292,	74·0
6. School pence		16,593,	27·5		1,862,	26·0
		60,343,	100·0		7,154,	100·0

Analysis of the Above for the Year 1888.

[000's omitted.]

Numbers and Classification as above.	National or Church of England.		Wesleyan.		Roman Catholic.		British and Others (Undenomi- national).		Board Schools.	
	£	P. ct.	£	P. ct.	£	P. ct.	£	P. ct.	£	P. ct.
1. Endowments	141,		@ 1,		2,		18,		3,	
2. Voluntary contri- } butions	582,		16,		66,		82,		@ 1,	
3. Rates	—		—		—		—		1,232,	
4. "Other sources"	30,		3,		@ 1,		6,		40,	
	753,	25	20,	8	69,	22	106,	21	1,276,	41
5. Government grants..	1,383,	46	114,	48	157,	50	220,	44	1,195,	39
	2,136,	71	134,	56	226,	72	326,	65	2,471,	80
6. School pence	878,	29	104,	44	87,	28	171,	35	621,	20
	3,014,	100	238,	100	313,	100	497,	100	3,092,	100

XI B.—*Abstract Summary of EXPENDITURE of Public Elementary Schools Inspected for the Annual Grant.*

[000's omitted.]

	For Ten Years, 1879-88.	For the Year 1888 only.
	£	£
1. Salaries	46,954	5,610
2. Books and apparatus	3,676	411
3. Miscellaneous ;	9,734	1,145
Total	60,364	7,166
		Per child 1 <i>l.</i> 19 <i>s.</i> 5 $\frac{3}{4}$ <i>d.</i>

Analysis of the above for the Year 1888.

[000's omitted].

	National and Church of England.	Wesleyan.	Roman Catholic.	British and Others (Undenominational).	Board Schools.
	£	£	£	£	£
1. Salaries	2,391,	193,	222,	387,	2,416,
2. Books and apparatus	169,	15,	21,	30,	177,
3. Miscellaneous	466,	32,	72,	78,	497,
	3,026,	240,	325,	495,	3,092,
Number of scholars in } average attendance }	1,674,	131,	189,	261,	1,393,
Rate of expenditure } perscholar in average } attendance }	1 <i>l.</i> 16 <i>s.</i> 3 $\frac{1}{2}$ <i>d.</i>	1 <i>l.</i> 16 <i>s.</i> 7 $\frac{1}{2}$ <i>d.</i>	1 <i>l.</i> 13 <i>s.</i> 5 <i>d.</i>	1 <i>l.</i> 18 <i>s.</i> 7 $\frac{3}{4}$ <i>d.</i>	2 <i>l.</i> 4 <i>s.</i> 7 $\frac{1}{2}$ <i>d.</i>
Number of schools in- } spected (<i>in full</i>) }	11,878	553	909	1,441	4,564

XII.—*Memorandum on "Building Grants."*

ENGLAND AND WALES ONLY.

The amount *paid* for schools, houses (not including training colleges), built, enlarged, or improved, up to the end of 1871, was nearly 1,500,000*l.* Grants were no longer made for this purpose after the passing of the Act of 1870, but payments on those already made increased the amount by about 270,000*l.*, and the account was finally closed in 1882 with a total of 1,767,000*l.*

These grants were supplemented by subscriptions from the promoters for 4,866,000*l.*, making a final total of 6,633,000*l.*

Additional accommodation was thus provided for 1,233,000 children, at the rate of 8 square feet per child, in 5,742 new, and 2,643 enlarged schools; and residences for 3,499 teachers. See Table No. 2 in returns of the department for 1882. Part IV of Appendix to Education Department Report, 1889, gives a list of all schools which have received this grant.

(Corrected from Memorandum 8B in paper of 1883.)

Condensed abstract of returns from 155 selected districts, viz. :—

- A. 125 boroughs and towns. Schools over or under 300 in average attendance.
- B. 30 unions. Schools over or under 100 in average attendance.

	Total Schools.	Size of each, or Average Attendance	Returns from Schools.	Grant.	Total Cost per Head.	Total Average Attendance. [000's omitted.]
A. TOWNS.			No.	<i>s. d.</i>	<i>s. d.</i>	
<i>Schools less than 300 a.a.—</i>						
Voluntary schools	954	170	915	16 1	34 3¼	162,
School board schools	209	178	194	17 1½	43 1¾	37,
	T. 1,163	av. 171	T. 1,109	av. 16 3¼	av. 35 10½	199,
<i>Schools more than 300 a.a.—</i>						
Voluntary schools	737	510	719	17 5¼	30 -¼	376,
School board schools	462	696	435	18 3¼	39 3	321,
	T. 1,199	av. 582	T. 1,154	av. 17 9¾	av. 36 4¾	697,
B. UNIONS.						
<i>Schools less than 100 a.a.—</i>						
Voluntary schools	482	57	474	16 -¼	39 11¾	27,
School board schools	97	63	91	16 3½	39 1	6,
	T. 579	av. 58	T. 565	av. 16 1	av. 39 -	33,
<i>Schools more than 100 a.a.—</i>						
Voluntary schools	301	225	301	16 5¾	33 9	67,
School board schools	107	258	104	17 -½	33 8½	28,
	T. 408	av. 234	T. 405	av. 16 7¾	av. 33 9	95,
Total all schools	3,349	—	3,233	—	—	1,024,

	Schools as Above.		Percentage of Passes and Grants.									
			Elemen- tary Subjects.	Merit Grant per Cent.				English.			Second Subject	
	Num- ber.	Num- ber.		Fair.	Good.	Ex- celnt.	Re- fused.	1s.	2s.	Re- fused.	Paid.	Re- fused.
A. TOWNS.												
<i>Schools under 300 a.a.—</i>												
Voluntary schools	915	—	83	31	49	15	5	36	55	9	94	6
School board schools	—	194	87	20	48	28	4	27	68	5	98	2
<i>Schools over 300 a.a.—</i>												
Voluntary schools	719	—	86	17	55	26	2	24	72	4	98	2
School board schools	—	435	89	12	50	37	1	17	78	5	99	1
B. UNIONS.												
<i>Schools under 300 a.a.—</i>												
Voluntary schools	474	—	79	39	43	8	10	47	40	13	90	10
School board schools	—	91	83	40	44	11	5	39	53	8	96	4
<i>Schools over 300 a.a.—</i>												
Voluntary schools	301	—	84	26	53	16	5	26	63	11	95	5
School board schools	—	104	87	20	52	27	1	30	65	5	99	1
Total (3,233)	2,409	824	—	—	—	—	—	—	—	—	—	—

XIII B.—Condensed abstract of returns from the rolls in all public elementary schools in—

1. 27 large towns, each over 10,000 children.
2. 23 medium towns, each under 10,000 and over 3,000 children.
3. 15 smaller " 3,000 (least school board school, 984).
4. 21 towns (no school board), each over 3,000.
5. 33 " ("), " under 3,000.

119 (comprised in the 125 boroughs and towns, Table A).

Numbers as Above.	Voluntary Schools.	Average Size of School (a. a.).	Average Attendance to Number on Rolls.	School Board Schools.	Average Size on Average Attendance.	Average Attendance on Rolls.
1	804	369	Per cent. 75	464	613	Per cent. 77
2	218	287	78	140	395	77
3	53	239	79	37	244	77
	1,075					
4	365	302	75			
5	232	204	71			
Total (2,313)	1,672 schools			641		

*Average Percentage of "Merit Grant" and Grant for English on the
above Schools.*

[illegible]

XIIIc.—*Memorandum of Towns referred to.*

27 LARGE TOWNS (not less than 10,000 children on the rolls in all public elementary schools). Population 4,355,566 in 1881.

Liverpool	Manchester	Birmingham	Leeds	Sheffield
Bradford	Nottingham	Bristol	Hull	West Ham
Leicester	Newcastle	Bolton	Oldham	Portsmouth
Sunderland	Swansea	Derby	Huddersfield	Cardiff
Brighton	Norwich	Wolverhampton	South Shields	Plymouth
Middlesboro'	Walsall			

23 MEDIUM TOWNS (less than 10,000 and more than 3,000 on rolls as above). Population 863,676 in 1881.

Burton-on-Trent	Luton	Hedworth, Monkton, and Jarrow	Swindon	Great Yarmouth
Stoke-upon-Trent	Ipswich	Tynemouth	Reading	Wakefield
King's Norton	Darlington	Worcester	Coventry	Kidderminster
Carlisle	Scarborough	Gt. Grimsby	Bath	
	Leamington		Exeter	
			Dudley	

15 SMALLER TOWNS (less than 3,000 on the rolls of all schools as above). Population 161,597 in 1881.

Newark	Chesterfield	Folkestone	Ilkestone	Bromsgrove
Loughboro'	Carmarthen	Hickley	Tiverton	Retford
Carnarvon	Penrith	Bideford	Haverfordwest	Llanidloes

21 TOWNS (more than 3,000 on rolls as above. *No board schools*). Population 823,378 in 1881.

Preston	Warrington	Ashton	Lincoln	Accrington
Wigan	Oxford	Maidstone	Crewe	Doncaster
Chester	Colchester	Bilston	Torquay	Glossop
Dukinfield	Stockport	Burnley	York	Stafford
Birkenhead				

33 TOWNS (less than 3,000 on rolls as above. *No board schools*). Population 370,318 in 1881.

Bishop Auckland	Tunbridge Wells	Eastbourne	Bury St. Edmund	Salisbury
Bedford	Oldbury	Taunton	Barnstaple	Worksop
Winchester	Kendal	Boston	Rugby	Pontefract
Frome	Trowbridge	Maidenhead	Chichester	
Worthing	Newbury	Beverley	Barnard Castle	Malvern
Devizes	Chippenham	Witney	Leek	Clevedon
Dunstable	Alston	Presteign		
		Chatham		

XIII D.—Comparing these with the index, p. 176, "Statistical Report," it appears that of these 119 towns there are in—

	School Board and Voluntary Schools.			Voluntary Schools (no School Board Schools).	
	"Large."	"Medium."	"Smaller."	Over 3,000.	Under 3,000.
1. Lancashire.....	4	—	—	6	—
2. Cheshire	—	—	—	5	—
3. Yorkshire	6	2	—	2	2
4. Durham.....	3	2	—	—	2
5. Staffordshire.....	2	3	—	2	1
6. Warwickshire	1	2	—	—	1
7. Derbyshire.....	1	—	2	1	—
8. Leicestershire	1	—	2	—	—
9. Nottinghamshire	1	—	2	—	1
10. Bedfordshire	—	1	—	—	2
11. Berkshire	—	1	—	—	2
12. Somersetshire	1	1	—	—	3
13. Devonshire	1	1	2	1	1
14. Wiltshire	—	1	—	—	4
15. Worcestershire	—	3	1	—	2
16. Hampshire	1	1	—	—	1
17. Oxfordshire	—	—	—	1	1
18. Sussex and Kent	1	—	1	1	5
19. Eastern counties	2	3	—	2	2
20. Northern „	—	2	1	—	2
21. Wales.....	2	—	4	—	1
Towns and boroughs....	27	23	15	21	33

The 30 "typical and other" unions are situated in the under-noted counties:—

Unions.	Unions.	Unions.
Cheshire 1	Bucks 1	Wiltshire 1
Salop 1	Hants 1	Kent 1
Durham..... 1	Essex 1	Herefordshire 1
York, N.R. 2	Hertford 1	Norfolk 2
„ N. and E.R... 1	Warwick 1	South Wales..... 1
Northumberland 1	Sussex 1	Lancashire 1
Anglesea 1	North Devon 1	Leicestershire 1
Surrey 1	Cornwall 2	Merionethshire..... 1
Dorset 1	Lincolnshire 2	

In all 30 unions in 26 counties. ("Statistical Report," p. 177.)

[Over

XIII E.—For the purpose of comparison (A, Col. 5) the total number of schools inspected, the number and rate of expenditure per scholar in average attendance as given in the returns of the Education Department, is subjoined for the year 1885, the years 1884-85 being those referred to in the above summaries.

	Schools.	Average Attendance. [000's omitted.]	Rate of Expenditure.	
			1885.	1888.
National Society and Church of England Schools }	11,834	1,641,	£ s. d. 1 15 10 $\frac{1}{4}$	£ s. d. 1 16 3 $\frac{1}{2}$
Wesleyan	556	129,	1 16 2 $\frac{1}{4}$	1 16 7 $\frac{1}{2}$
Roman Catholic	850	174,	1 12 7 $\frac{3}{4}$	1 13 5
British, &c.	1,479	257,	1 17 4	1 18 7 $\frac{3}{4}$
Board Schools	4,301	1,195,	2 5 4	2 4 7 $\frac{1}{2}$
Summary	19,020	3,396,	1 19 1 $\frac{1}{2}$	1 19 5 $\frac{3}{4}$

TABLE XIV.—*Population under SCHOOL BOARDS and SCHOOL ATTENDANCE Committees. England and Wales.*
(Report of Education Department.)

SCHOOL BOARDS.			Population (1881).	
	Number.		[000's omitted.]	
In England.....	1 —	(London)	— —	3,854,
„ „	142 —	In boroughs	7,135, —	} 7,385,
„ <i>Wales</i>	— 19	„	— 250,	
„ England.....	1,811 —	For 2,504 parishes	4,440, —	} 5,195,
„ <i>Wales</i>	— 282	„ 438 „	— 755,	
Total	1,954 301 = 2,255			16,414,
SCHOOL ATTENDANCE COMMITTEES.				
In England.....	116 —	In boroughs	1,640, —	} 1,680,
„ <i>Wales</i>	— 9	„	— 40,	
„ England.....	72 —	„ urban sanitary districts	799, —	} 799,
„ <i>Wales</i>	— —	None	— —	
„ England.....	534 —	In unions	6,766, —	} 7,082,
„ <i>Wales</i>	— 45	„	— 316,	
Total	722 54 = 776			9,561,

TABLE XV.A.—CHARITY COMMISSION : *Endowed Schools. Summary of SCHEMES Published, Submitted, and Approved.*

Years.	Draft Published by Commission.		Submitted to Education Department.		Approved by Her Majesty.			
	Number.	Amount.	Number.	Amount.	Laid before Parliament.	Without being laid before Parliament.	Total Number.	Total Amount.
		£		£				£
1882....	32	16,053	35	15,503	13	39	52	41,589
'83....	34	20,389	21	7,232	7	19	26	15,037
'84....	32	28,123	24	18,803	3	22	25	12,328
'85....	31	77,741	33	18,692	1	15	16	4,837
'86....	33	18,906	25	81,328	3	26	29	16,257
'87....	23	15,673	33	30,736	2	31	33	20,069
'88....	27	6,403	20	5,161	2	25	27	11,331
	—	—	—	—	31	177	208	121,448

B.—*Summary of Schools Regulated by Schemes under the Endowed Schools Act. Classified by Grades.**

Schemes Submitted by	First Grade.	Second Grade.	Third Grade.	Elementary.	Total.
Endowed Schools Commissioners, up to 1877	34	68	76	93	271
Charity Commissioners, up to 1888 inclusive	48	140	94	170	452
	82	208	170	263	723

* The distinction between the various grades of schools depends generally upon the character of the education prescribed in the scheme, the rate of fee payable, and the age at which the scholars leave the school—

E.g. A school in which a complete classical or an advanced modern education is given with a minimum fee of about 10*l.* a year and a leaving age of 19, would be termed a school of the first grade.

A school of the second grade would be one in which the main object of the teaching would not be so completely classical, in which the minimum fee would be about 5*l.* a year, the leaving age 17.

A school of the third grade would be one in which little or no classics are taught, where the minimum fee would be about 3*l.* a year, and the leaving age 15.

The elementary schools are all constituted public elementary schools within the meaning of the Elementary Education Act, 1870.

TABLE XVI.—SCIENCE *and* ART Department.

The following table taken from their report for 1889, gives in concise form the total *number of persons* receiving instruction in the years 1879 and 1888 respectively, from teachers holding certificates granted by this department, viz., in—

	1879.	1888.
Elementary day schools.....	725,129	806,048
Training colleges for elementary school teachers } <i>Science</i>	3,217	4,099
Training colleges for elementary school teachers } <i>Art</i>	3,698	3,927
<i>Science</i> schools	59,519	112,808
Schools of <i>Art</i> and <i>Art</i> classes	58,584	77,364
School teachers in training colleges.....	252	302
Art teachers in training colleges and national scholars....	52	66
Schools examined but not aided { <i>Science</i>	4,504	3,876
{ <i>Art</i>	7,981	3,106
Total { <i>Science</i>	67,492	121,085
{ <i>Art</i>	795,444	890,511
Total (United Kingdom).....	862,936	1,011,596

Note.—List of Commissioners appointed to inquire into the Elementary Education Acts, England and Wales:—

*Viscount Cross, G.C.B., *Chairman.*

*Cardinal Manning.

*The Duke of Norfolk, K.G.

*Appointed 1887, in place of Mr.
B. C. Molloy.*

*Earl Harrowby.

*Earl Beauchamp.

*Bishop of London.

*Lord Norton, K.C.M.G.

*Right Hon. Sir F. R. Sandford,
K.C.B.

††The Hon. Lyulph Stanley

*Appointed 1886, in place of the
Right Hon. A. J. Mundella.*

†Sir John Lubbock, Bart., M.P.

† Sir B. Samuelson, Bart., M.P.

*The Rev. J. H. Rigg, D.D.

††R. W. Dale, Esq., LL.D.

*The Rev. Canon Gregory.

* „ Canon B. F. Smith.

* T. D. C. Moore.

*C. H. Alderson, Esq.

*J. G. Talbot, Esq., M.P.

†S. G. Buxton, Esq., M.P.

††T. E. Heller, Esq.

*S. Rathbone, Esq.

†† Henry Richard, Esq.

†† George Shipton, Esq.

* Fifteen signed the majority report.

† Eight " minority "

‡ Five " special report on various matters in detail.

Note.—The ten volumes of the reports are numbered and dated as follows:—

C-4863.	1886.	} Formal Report. Syllabus of points of inquiry and evidence at length.
C-5056.	'87.	
C-5758.	'87.	
C-5329.	'88.	Digest of Evidence.
C-5329-I.	'88.	Index to ditto.
C-5485.	'88.	Final Report.
C-5485-I.	'88.	Foreign Returns.
C-5485-II.	'88.	Statistical Report.
C-5485-III.	'88.	Report, &c., from Training Colleges.
C-5485-IV.	'88.	} Appendix to Final Report: on Religious Teaching in School Board Schools.

DISCUSSION *on* MR. ROWLAND HAMILTON'S PAPER.

DR. J. G. FITCH offered his testimony to the extremely valuable and painstaking nature of Mr. Hamilton's investigations. That gentleman had taken a very large subject, and had made the most diligent investigations into it. He (Dr. Fitch) as an old red tape official, who had spent much of his life in the midst of the phenomena described in the paper, was very much struck with the singular accuracy and skill with which the figures had been dealt with. He was unable to put his finger on a single fallacy in reasoning, or a single inaccuracy in the manipulation of the figures. The paper was an historical document, and anyone who wished to know what was the present condition of elementary and higher education, what point had been reached in our progress, what were the problems that yet remained to be solved, and what were the various steps by which our present success had been attained, could not do better than take the paper and put it by him for permanent reference. If he might be forgiven one criticism of a purely verbal kind, he would say that "The Schools Enquiry Commission" was not technically the name of the commission from which the quotations were made. The "Schools Enquiry Commission" was the commission of 1864, over which Lord Taunton presided, and which had for its chief subject of investigation the Endowed Grammar Schools, and the condition of secondary instruction throughout the country. He (Dr. Fitch) served as one of the Assistant Commissioners under that commission nearly twenty years ago. The title of the much more recent commission, to which Mr. Hamilton had so often referred, was the Royal Commission on the Education Acts. Lord Cross presided over it, and its report was presented to Parliament in 1888. Mr. Hamilton's paper would be used for future reference, and it was therefore as well to be careful as to the terminology employed. He congratulated the Society on having received and placed on record in its transactions; from one of its members, a paper so full of suggestion, and so extremely clear and accurate in its statements.

Rev. J. J. COXHEAD, M.A., felt very grateful to the writer of the paper for putting such interesting facts so lucidly before the meeting. The statistics of children inside the schools were of course easy to get at, though not easy to master as they had been by Mr. Hamilton, but it was difficult to arrive at the figures in respect of those children who unfortunately to some extent were still outside the schools. As he happened to be the Chairman of the bye-laws committee of the London School Board, he took great interest in the matter, and so far as the metropolis was concerned, he was able to speak from personal experience of the difficulty of arriving at accurate statistics with reference to those children who were not at present on the rolls of elementary schools. Those

figures were of very great importance, because they really represented that fringe of absolutely illiterate and uneducated humanity which was a source of so much danger to the community at large. He was glad to see in the paper a reference to the report of the Registrar-General, because his experience in London was that they did not have so much co-operation with the department of the Registrar-General as it would be desirable that they should have. There was no doubt on the part of the population a considerable amount of hostility towards the compulsory clauses of school boards. Therefore, as the Registrar-General was anxious to get his figures as accurate as possible, he did not like to put an obstacle in his own way by seeming to ally himself with the education officers throughout the country. (The Chairman said they were not able to go beyond the purview of the Act of Parliament, which confined them to certain things.) Rev. Mr. Coxhead said he was not finding fault with the officials, but only calling attention to the facts. (The Chairman said the criticism was rather directed to Parliament.) Rev. Mr. Coxhead said it might be quite possible before 1891 for the Act of Parliament to be so extended as to make it applicable to the educational interests of the country. He thought it desirable that the Registrar-General should require a return in every case from every family of the children of school age, and as to whether they attended school or not. If that were done, accuracy of statistics with reference to the educated and uneducated part of the community could be arrived at. As a matter of fact, every year the London School Board did attempt to obtain an accurate return of the children of school age throughout the metropolis, taking children between 3 and 14, and the figures so obtained were contrasted with the theoretical figures of the returns of the Registrar-General. He was glad to say that year by year the London School Board had been able to reach a closer approximation to the theoretical figures of the returns of the Registrar-General, so that at present there was only a difference of 3 per cent. It was of the utmost importance that school attendance committees should be able to have an accurate return of all the children within the school age. There was another element of uncertainty as to the number of children who ought to be at school, arising from the fact that it was generally calculated that children ought to be at school between the ages of 3 and 13, but as a matter of fact school boards were not able to bring compulsion to bear upon children between 3 and 5. The writer of the paper admitted that the fact of there being nearly a million places in excess, would seem to show that generally speaking the accommodation was equal to the number of children who ought to be at school. But the difficulty arose from the want of an accurate figure as to the number of children between 3 and 5 who ought to be at school. It was interesting to note that practically the proportion of children remained nearly the same during the whole fifteen or sixteen years that the calculation had been made. He thought he detected in the closing remarks of the paper a slight difference of opinion between the writer and those who held the general view with regard to payment by results; but he was

glad to find that they were warned against the very great danger of allowing schools to assess their own educational value. He was one of those who thoroughly believed in inspectors, and he hoped that the educated public opinion of the country would support the inspectors in their arduous work. If the public money was to be well expended, and the education of the children well carried on, outside inspection must be thoroughly supported by public opinion. It was for that reason that there should be an *entente cordiale* between the inspectors and the inspected, which would be promoted if there was a strong public opinion that public money must not be spent unless there was proper and satisfactory inspection.

Sir R. W. RAWSON said in reference to the remarks of the last speaker, implying reluctance on the part of the Registrar-General to furnish information to the School Board, he would venture, in the absence of Dr. Ogle and Mr. Humphreys, to say that if it was in their power to give the information they would give it. Their reluctance arose, he believed, from the fact that the figures they could give might be misleading. The Registrar-General believed that up to the age of 5 he could give some tolerably correct information with regard to the ages of children, but beyond 5 he would not venture to claim correctness for his figures in any but quinquennial periods. The figures also of a census taken several years ago would furnish very misleading information. Mr. Hamilton rather seemed to depreciate the efforts of the Recreative Evening School Association. The idea of the Association was to make the evening instruction for young people from 12 to 14 or 15 attractive, but not simply to give them recreation. The two points in which there was really "recreation" were the musical drill, and the exhibition of objects of natural science and historical and geographical studies shown by the lantern. The aim was to give the children a love for knowledge. The Association had existed for about five years, and had already about 7,000 children, 600 volunteer teachers, and about 160 schools. The young people were not of an age to be admitted to such places as the People's Palace, and the Recreative Evening School Association filled up the gap between the school age and the age at which admittance was permitted to the polytechnic schools, and helped to qualify its pupils to make the best use of the latter.

Mr. T. H. ELLIOTT said that one of the most satisfactory features of the statistics given in the Appendix to the paper was, that although at every age there had been an actual numerical increase of children attending school, yet the larger increase by far was manifested in those ages when children could most appreciate the lessons taught to them at each age. Between 4 and 13 there had been an increase in the number of children on the registers, but there had been a positive reduction in the percentage of children in school attendance at the younger ages as compared with the total number on the registers. The infants under 4 years of age had increased from 128,000 in 1879 to 140,000 in 1888, but the percentage as compared with the whole number of children at

school had decreased from 3.46 per cent. to 2.98 per cent. There was also a similar decrease between the ages of 4 and 5, 5 and 6, 6 and 7; but there was an important increase, though at first comparatively slight, in the case of the older scholars. The increase in the higher ages was apparent throughout the series of years, there being a tendency to an increase in the number of children present at school as the ages approached 13. With reference to Mr. Coxhead's remarks as to the census, he gathered that the suggestion was that in the returns a column should be added showing in the case of children under 13 whether they attended school or not. He thought it would be much better for the School Board to maintain its present individual work. Any question of the kind suggested would tend to make the census distrusted by ignorant people, and the information given would be unreliable. The parent who would keep his child from school, would be quite willing to state that the child attended school when this was not the case. Again, the census was only taken once in ten years, and therefore any information given in 1881 would be valueless now. The child might be in school attendance on the day of the census, and three months afterwards he might be away.

Mr. STEPHEN BOURNE said that the progress of education was a matter of extreme importance to the nation, and especially in the case of those who went abroad to the colonies. Everything possible should be done to prevent young Englishmen being heavily handicapped in the race with the youth of other nations.

Sir R. W. RAWSON asked if it was not possible that the falling off in the proportion of infants attending school arose from the abolition of inefficient dame schools?

Mr. ELLIOTT said there had been an absolute increase in the numbers, though the percentage had fallen off.

Rev. Mr. COXHEAD said the explanation was supposed to be that there was an increasing feeling that it was not desirable to send very young children to school, and that the education should begin rather later.

Mr. A. E. BATEMAN thought one result of the paper was to confirm the opinion already expressed by the Society, that the census should be taken every five years. The Registrar-General at present did not possess the information which was required. Mr. Hamilton had referred to the stated increase in the general population during the years he had enumerated, but it was not known whether the increase of children of different ages was more or less than that general increase. He had recently seen a volume of French elementary school statistics, and it was evident that while England had been going ahead, France had been stationary for the last six years. While the increase of population there was 3 per cent., the increase in the number of children in the schools was barely that proportion. In England, however, while the

increase of population was, as nearly as could be ascertained, 8 per cent., the school increase was 12 per cent., and the average attendance increase 16 per cent. The lay schools in France had increased their numbers by a quarter of a million, whilst the religious schools had decreased 66,000.

Major CRAIGIE called attention to Table VII, which showed the children examined and passed in the "specific subject," "principles of agriculture." It seemed these had diminished remarkably both absolutely and relatively in number. For 1,859 examined in this subject in 1884, only 1,151 were reported in 1888. He suspected that the decrease in the agricultural population was not the cause of that, but that the diminution had taken place in urban districts arising from some decree of the department forbidding the selection of subjects unsuited to the locality. Botany too had fallen from 2,600 to 1,600, and animal physiology from 22,800 to 16,900; while subjects like mechanics had largely increased, though magnetism and electricity, which it might have been thought would attract attention, had dropped from 3,200 to 1,900 in recent years. He should be glad if Mr. Hamilton could give the correct explanation of these curious changes. Like all the previous speakers, he desired to thank the writer of the paper for a valuable addition to the stores of the *Journal*.

Sir JULAND DANVERS said it was now contended that no system of elementary education would be complete unless it were made free and compulsory, but thought that with such a concession there would still remain the difficult point of evasion of attendance. He asked if Mr. Hamilton could recommend any better machinery than that which now existed, by which it would be possible to bring in the absentees in the event of free education being established.

The CHAIRMAN (Mr. Frederick Hendriks, Vice-President), in closing the discussion, said that it appeared from Mr. Hamilton's figures, that we were now in the happy position of approximating to a maximum of good return for the enormous annual outlay of capital invested in the education of the people. Mr. Hamilton had in a former paper read to the Society compared the progress of ten years, 1872-82. The figures then brought forward showed that whilst the population had increased between 13 and $13\frac{1}{2}$ per cent., the average attendance of scholars under education at the public expense had augmented by no less than 125 per cent. in the decennial period. Such a startling increase was of course attributable to the comparison being of what might be called the dark ages of public education before 1872 with the enlightened period attained in 1882, and could not be expected to go on in future with such leaps and bounds. However, in the last six years, 1882-88, whilst the population had increased only by about 8 per cent., the increase of average attendance of scholars in board schools had been no less than 20 per cent., and in voluntary schools it had come up to 46 per cent. It must be confessed that this was a very hopeful

sign of progress. Speaking for the moment as an overseer of the poor in a London parish, and seeing the ever increasing burden of the poor rate which had gone on even in the last six years, 1882-88, he was much interested in the still indeterminate problem whether in any reasonable number of future years the State might fairly look to any diminution in the vast sums expended on the relief of the poor, being directly caused through the influence of the growing sums now annually spent on national education. It was but fair to expect that a time ought to arise when the growth in the educational outlay would be counterbalanced by a decline in the relief of the poor outlay, and that as a result of the enormous expenditure in cultivating the minds of the general mass of the people, there would grow out of it a remunerative ability on their part to help themselves to more effectual support, so as to prevent their becoming a burden on parish charity; and that increased thrift and habits of self-respect might be produced by a free education, teaching them how to gain a livelihood, with the ambition of avoiding as much as possible the miserable position of paupers living upon parish rates. Daylight can scarcely yet be said to dawn upon this question, nor that political arithmeticians can discern in advance in what number of years such an improvement can be looked for. In the meantime we must wait and watch, and could not be otherwise than thankful for such valuable investigations as those of Mr. Hamilton, to whom the Society is indebted for a most instructive digest of educational statistics contained in many complicated reports and tables.

Mr. HAMILTON (in reply) thanked the speakers for the kind expressions they had used with regard to the paper, and the meeting generally for the patience with which they had listened to him. He had described the scope of the recent commission in one of the opening paragraphs of his paper, and had been careful to give its full designation in the Appendix. He had by no means forgotten the important commission of 1864, but had been under the impression that the same name had been popularly given to that of 1886. He however gratefully accepted Dr. Fitch's criticism, and would make the suggested alterations throughout. Mr. Coxhead gave fairly one reason for the comparatively small attendance of infants; but he thought that few of those who disparaged infant education knew what a bright and cheerful place an infant school could be made. He was sorry he could not give Major Craigie any further information. A close examination of the returns from the Science and Art Department might throw some light upon the subject. One reason was given by it for the falling off in the grant for agriculture, viz., the adoption of a higher standard, on the ground that the previous range of instruction had been too low to be of any practical use. He did not think the question of free schools would touch the curriculum at all, nor did he specially advocate the "Kindergarten" system; but he desired in his paper to direct attention to methods of educating the faculties by direct observation of familiar *things*, rather than by working prematurely on the lines of scholastic analysis, which he thought were unsuited

to a child and contrary to the natural order of development. Some experience of the work of evening colleges had induced him to give a warning note on the danger of working on too low a scale, for he had found that permanent success depended on the maintenance of a good standard both of teaching and of amusement. He was fully sensible of the great difficulty of carrying this principle into actual practice, especially in the earlier stages of an extensive movement such as that which was promoted by the Recreative Evening School Association, with whose objects and efforts he most heartily sympathised.

MISCELLANEA.

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I.—*The Consumption of Alcohol in Various Countries.* By E. YVERNÈS. (Translated from the *Journal de la Société de Statistique de Paris*. November and December, 1889.)

THE organising committee of the International Congress appointed to inquire into the question of alcoholism, has entrusted us with the duty of drawing up a series of international statistical tables, to show clearly the connexion existing between the increase in the consumption of alcohol, and the development of crime and insanity. It was not without considerable diffidence that we accepted this task, surrounded as it is with so many and such grave difficulties. In the first place, it is almost impossible to obtain statistical data which would be absolutely comparable. Economic and social conditions are not everywhere the same. The population of each country has its own customs, its own manner of living, and the legislation affecting it must necessarily exercise an influence over its moral condition.

In so far as regards the consumption of alcohol, it is not even possible to rely upon the returns themselves, for on the one hand we must carefully take into consideration the method employed by each country in levying the spirit duties, and on the other, the possibility of fraud entering into the question and upsetting the calculations. It is impossible to tell to what extent illegal importation of spirits is carried on, and this would of course vitiate the results very considerably. From the point of view of crime, a comparison of the various criminal statistics leads us to conclusions of a very questionable accuracy, the penal laws being so different; while as regards insanity, the causes of which are so manifold, it is by no means easy to discover from the statistics themselves to what extent alcoholism enters.

These difficulties however were not the only ones with which we had to contend in the accomplishment of our task. We were acquainted with the remarkable international inquiry instituted in 1884 by the Swiss Federal Bureau, in accordance with the decree of the 30th June, 1882, as well as the voluminous and exhaustive report presented to the French Senate in February,

1887, by the late M. Claude, Senator for the Vosges, and it appeared to us that our efforts should be directed mainly to supplementing the information already given in these reports; and with this object in view, we have applied for assistance to our European colleagues, who have most readily responded to our appeal.

Probably the best and most complete method of meeting the wishes of the committee, would have been to collect all the information obtained on the subject in a single table, showing at a glance, whether the number of houses for the sale of liquor, the consumption of alcohol, the amount of crime and insanity, always and everywhere follow a parallel course. But the significance of the figures not being the same for all countries, it became necessary to renounce this method of procedure, and we found ourselves constrained to devote to each country a special section.

Taking first Germany, we find that there is no official document in existence which throws any light upon the question of the number of houses for the sale of intoxicating liquors in that country. The only information of which we can make use appears to be contained in the *Statistisches Jahrbuch für das Deutsche Reich* for 1889, and this consists of a statement showing the number of inhabitants to each distillery. The proportion rose from 870 in 1879, to 928 in 1887.

If we deduct from the quantity of alcohol imported and produced, the quantity exported and medicated, we find the following results for those districts which are subject to the spirit duties :—

Years.	Consumption.	Proportion per Head of Population.
	Galls.	Qts.
1880-81	60,628,800	6·80
'81-82	62,280,100	6·93
'82-83	58 892,000	6·51
'83-84	61,935,000	6·80
'84-85	65,405,200	7·12
'85-86	63,798,500	6·89

The number of persons condemned for crime or misdemeanour was as follows :—

Years.	Persons Condemned.	Proportion per 100,000 of the Population over 12 Years of Age.
1882.....	329,968	103·1
'83.....	330,128	102·3
'84.....	345,977	106·6
'85.....	343,087	104·6
'86.....	353,000	106·6
'87.....	356,357	106·7

It is impossible to show for the whole of Germany what is the number of insane. From certain information which we have been

enabled to obtain regarding Prussia, it appears that in 1871 there were 55,088 persons insane, a proportion of 22 per 10,000 inhabitants, while in 1880 the numbers had risen to 66,345 or a proportion of 24 per 10,000. In Saxony there were 5,275 in 1871, or 20 per 10,000 inhabitants; in 1875 6,131, or 22 per 10,000; in 1880 7,061, or 24 per 10,000; and in 1885 7,294, or a proportion of 26 per 10,000 inhabitants.

The actual number of licenses granted for houses for the sale of intoxicating liquors in England and Wales for the year 1889, amounted to 181,297, and according to M. René Stourm, who is the author of a work upon the taxation of alcohol in the principal countries of Europe, the consumption of spirits in England and Wales has been as follows for the undermentioned years:—¹

Years.	Consumption.	Proportion per Head of Population.
	Galls.	Qts.
1852.....	17,330,700	2·52
'62.....	13,850,800	1·89
'72.....	21,156,100	2·60
'82.....	21,183,600	2·40
'83.....	21,329,000	2·40
'85.....	19,930,000	2·19

The number of persons arrested for indictable offences or proceeded against summarily during the last twenty years, taking the annual average, has been as follows:—

Years.	Number.
1869-73.....	571,989
'74-78.....	675,782
'79-83.....	704,874
'84-88.....	695,445

Of these the habitual drunkards numbered in the following years:—

¹ According to the thirty-second report of the Commissioners of Her Majesty's Inland Revenue, the quantities of British, foreign, and colonial spirits retained for home consumption, and the proportion per head of the population in the United Kingdom in each of the years 1852, 1862, 1872, 1882, and from 1885 to 1888, were as follows:—

Years.	Quantities Retained for Home Consumption.	Proportion per Head of the Population.
	Galls.	Qts.
1852.....	30,067,100	4·38
'62.....	24,039,800	3·28
'72.....	35,940,500	4·51
'82.....	36,892,800	4·18
'85.....	34,622,100	3·81
'86.....	34,588,800	3·77
'87.....	34,132,800	3·68
'88.....	35,069,100	3·74

Years.	Number of Habitual Drunkards.
1869-73	39,680, or 6·9 per cent.
'74-78	45,692 „ 6·7 „
'79-83	38,870 „ 5·5 „
'84-88	39,444 „ 5·6 „

It appears from the judicial statistics of England and Wales, that the annual average number of drunk and disorderly cases summarily dealt with before the magistrates, was as follows :—

Years.	Number of Drunk and Disorderly Cases dealt with.	Proportion of Cases dealt with by the Magistrates.
		Per cent.
1868-72	133,814	25
'73-77	195,683	31
'78-82	181,963	27
'83-87	180,526	26

The annual average number of insane persons inscribed on the registers of the various lunatic asylums was as follows for the undermentioned years :—

Years.	Number of Lunatics.
1869-73	56,718
'74-78	65,182
'79-83	73,159
'84-88	80,384

In Austria, since the passing of the law of the 23rd June, 1881, relative to the sale by retail of intoxicating liquors, the number of houses for such sale has been as follows :—

Years.	Number of Houses.	Years.	Number of Houses.
1882	118,023	1885	105,838
'83	103,591	'86	106,326
'84	104,787	'87	112,572

The proportion therefore of inhabitants to each house for the sale of spirit was 189 in 1882, and 266 in 1887.

There appears to be an entire absence in Austria of any documents or publication, official or otherwise, bearing upon the question of the consumption of alcohol in that country, even magazine articles and unofficial publications relating to the drink question being silent upon this point. According however to an estimate made by M. Claude, late Senator for the Vosges, this consumption amounted at the very lowest to 3·08 quarts per head of the population.

During the ten years comprised between 1877 and 1888, the average annual number of persons condemned for crimes and misdemeanours by the various correctional tribunals was as follows :—

1877-81	439,958 persons, or 2,011 per 100,000 inhabitants.
'82-86	549,041 „ 2,399 „

The number of insane persons received in the various asylums was in 1877-81 (annual average) 9,488, of whom 783 were dipsomaniacs, and in 1882-86 11,943, of whom 1,169 were dipsomaniacs.

In Belgium there does not appear to be any official statistical data bearing upon the question of the sale of intoxicating liquors. At the sitting of the Belgian Senate, on the 1st June, 1889, Baron Surmont de Volsberghe estimated, at the lowest computation, the number of taverns and houses for the sale of drink in Belgium at 136,000. If we compare the estimate with the numbers of the population of the country, it results in a proportion of one house to every 43 inhabitants. In the French Department of the Nord, which borders on Belgium, the proportion of houses for the sale of drink to the number of inhabitants, was in the ratio of 1 to 46 on the 1st January, 1886. Baron Surmont de Volsberghe went on to say that if the whole of Belgium were taken into consideration, it would be found that the increase in the number of public houses was 19 per cent. from 1840 to 1860, and 44 per cent. from 1860 to 1882.

The average annual consumption of alcohol in Belgium from 1868 to 1887 was as follows:—

Years.	Consumption.	Proportion per Head of the Population.
	Galls.	Qts.
1868-72	8,800,900	6·95
'73-77	10,524,500	7·83
'78-82	11,286,100	8·06
'83-87	11,318,100	7·74

The above figures have been obtained from official sources, and they by no means agree with unofficial estimates. For example, M. Cauderlier, Secretary of the Patriotic League for the suppression of the liquor traffic, stated in a speech made by him in 1888, "Belgium now consumes annually 70 million litres of gin, that is to say, 60 litres of the spirit for each male adult."

The annual average number of persons tried for crimes and misdemeanours for each quinquennial period from 1868 to 1887 was as follows:—

1868-72.....	99,165
'73-77.....	115,043
'78-82.....	141,059
'83-87.....	168,230

According to the last *Annuaire Statistique de la Belgique*, the number of insane persons placed in lunatic asylums, or residing under the care of their relations, amounted to 6,475 in 1858, 8,240 in 1868, and 10,020 in 1878.

In Denmark the number of houses for the sale of intoxicating drinks was as follows for each of the years 1860, 1870, and 1880:—

Years.	Number of Houses.		
1860.....	3,492, or 1 to every 460 inhabitants.		
'70.....	7,709	"	231 "
'80.....	10,105	"	194 "

As regards the consumption of spirits in this country, it has been shown for the years 1879 and 1880 to be in the proportion of sixteen quarts *per capita*. The annual average number of cases brought before the correctional tribunals was as follows for the undermentioned quinquennial periods :—

	Persons Appearing before the Tribunals.	Proportion of Persons Accused to Population.
		Per 100,000
1871-75	12,520	701
'76-80	18,212	970

While as regards the number of insane persons, it amounted in 1860 to 3,248, in 1870 to 3,884, and in 1880 to 5,865.

In Finland the number of houses for the sale of intoxicating liquors (retail shops for the sale of brandy, and taverns) during the period comprised between the years 1878 and 1887 remained stationary. The annual average for the period 1878-82 was 1,643, and for 1883-87 1,655, thus giving for the former period a proportion of one house to every 1,254 inhabitants, and for the latter, one to every 1,574 persons. Since the 1st January, 1887, the sale of drinks by retail is only permitted when accompanied by the sale of solid food. During each of the years from 1879 to 1886 all merchants and shopkeepers inhabiting the towns had the right of selling foreign alcoholic beverages in quantities under 13 litres (11·44 quarts), but this privilege was withdrawn by a decree of the 1st January, 1887. Dating from the 1st January, 1888, no house for the sale of alcoholic beverages has been tolerated in the rural districts.

The consumption of alcohol in Finland was as follows :—

Periods.	Consumption.	Proportion per Head of the Population.
	Galls.	Qts.
1869-73 (annual average)	1,539,300	3·48
'74-78	2,568,500	5·37
'79-83	2,097,500	4·07
'84-88	2,022,200	3·11

The steps taken in 1887 and 1888 to put down the liquor traffic in Finland, had the result of reducing the proportion of spirits consumed in that country per head of the population to 2·4 and 1·8 quarts respectively.

The annual average number of persons condemned for drunkenness by the lower judicial tribunals in Finland for the undermentioned periods has been as follows :—

Periods.	Number of Persons Sentenced.		Proportion per 100,000 Inhabitants.
	In Towns.	In Rural Districts.	
1868-72	904	265	1,170
'73-77	1,230	458	1,688
'78-82	1,089	489	1,578
'83-87	1,427	541	1,968

As regards the number of insane persons, the only information on this point relates to a year so remote as 1880, it was then 4,287, corresponding to a proportion of 20·8 per 10,000 inhabitants.

In France, not including the city of Paris, the number of houses for the sale of intoxicating liquors will be seen on reference to the subjoined tabular statement:—

Years.	Number of Houses.	Years.	Number of Houses.
1874	342,980	1880	356,863
'75	342,622	'81	367,823
'76	346,598	'82	372,587
'77	343,139	'83	377,514
'78	350,697	'84	386,853
'79	354,852	'85	395,703

The increase in the twelve years under notice has been at the rate of 15 per cent.; this may be accounted for by the fact that up to 1880 it was necessary for the purposes of opening a house for the sale of spirituous liquors, to apply for a special permit from the authorities, and that since that period a simple written declaration has been all that is required (law of 17th July, 1880). The number of inhabitants to each licensed house fell from 99 in 1874 to 90 in 1886. In Paris the number of houses for the sale of drink is estimated at 26,600 approximately, a proportion of one house to every 88 inhabitants.

The quantity of alcohol consumed per inhabitant was for the period 1873-77, taking the annual average, 2·37 quarts; for the period 1878-82, 3·1 quarts; and for the period 1883-87, 3·4 quarts.

The assize courts, correctional tribunals, and ordinary police tribunals have adjudicated as follows, taking in each case the annual average:—

Periods.	Persons Accused of		
	Crimes.	Simple Infractions of the Law.	Misdemeanours.
	No.	No.	No.
1873-77	4,896	171,476	518,371
'78-82	4,366	176,090	446,419
'83-87	4,294	194,272	469,971

During the same periods the average annual number of persons sentenced for drunkenness was as follows :—

Periods.	Total Numbers Sentenced.
1873-77	84,140
'78-82	66,998
'83-87	63,979

On the 1st January, 1872, the number of insane persons confined in special institutions was 37,554; it has successively increased by an uninterrupted progression to 52,876 on 31st December, 1885. By reason of the excess of persons entering over those leaving these establishments, the population of these asylums increased in fourteen years by 15,322, or a proportion of 40 per cent., which is equivalent to an annual augmentation of 3 per cent., according to the returns published in the *Statistique Annuelle de la France*. According to the report of M. Claude, Senator for the Vosges, the proportional number of persons afflicted with insanity caused by excessive use of intoxicants may be estimated at 14 per cent.

For Hungary it is absolutely impossible to estimate the number of houses for the sale of spirituous liquors, by reason of the fact that the sale of alcoholic beverages is not subjected to any special tax. The returns showing the distribution of the population according to occupations, moreover, do not give the desired particulars. In the last census enumeration, that taken in 1880, the returns showed the existence of 769 vendors of brandy, 22,981 tavern keepers, and 667 hotel proprietors, in all 24,417 persons who sold spirituous liquors. Assuming, therefore, that each of these persons maintained one establishment, this would give one house for every 640 inhabitants. It is evident however that the figure is very wide of the mark, as it leaves out of consideration the number, undoubtedly a high one, of small village shopkeepers, who sell all sorts of articles, including in all probability spirits. Moreover, the industrial statistics of the country by not giving the number of merchants, is equally unavailing as an authority upon the question.

Again, the consumption of alcohol in Hungary cannot be stated with any degree of accuracy, although the *Statistique Alimentaire* publishes certain data relating to the consumption of brandy. In Hungary properly so called (exclusive of Croatia and Slavonia) the annual consumption of brandy is 48,130,720 gallons, or 12·3 quarts per head of the population. Taking into account that the brandy sold in the country contains as a rule 35 per cent. of alcohol, a consumption of 16,833,873 gallons of alcohol, that is to say a proportion of 4·70 quarts of pure spirit per head of the population, is obtained.

The new Hungarian penal code was put into force on the 1st September, 1880, and the following is the number of persons tried by the various tribunals in each year from 1881 to 1886 :—

Years.	Crimes and Misdemeanours.	Infractions of the Law.	Total.	Proportion per 100,000 Inhabitants.
	No.	No.	No.	No.
1881	71,160	111,227	182,387	1,168
'82	75,485	129,162	204,647	1,306
'83	69,206	130,423	199,629	1,276
'84	77,170	150,376	227,546	1,455
'85	77,944	181,214	259,158	1,657
'86	79,214	202,864	282,078	1,803

Finally, for the whole of Hungary there were estimated to be 13,162 madmen, and 18,449 imbeciles and idiots in 1870, and 12,809 mad people, and 18,672 imbeciles and idiots in the country in 1880.

In Italy, according to an inquiry instituted by the Ministry of the Interior, the number of houses for the sale of drink were:—

In 1874.....	146,075, or 1 house to every 187 inhabitants.
„ '78.....	156,364 „ 180 „
„ '84.....	167,472 „ 175 „

The quantity of alcohol of 100 degrees consumed from 1872 to 1886, estimated from the excess of imports and the manufacture over the exports, was on an annual average:—

In 1872-76.....	16,354,100 gallons, or 2'37 quarts per inhabitant.
„ '77-81.....	20,454,400 „ 2'81 „
„ '82-86.....	32,447,100 „ 4'40 „

The above quantity, however, of alcohol is not entirely consumed in drinks; a certain portion is destined for industrial and pharmaceutical purposes. The actual consumption of alcohol of 100 degrees is estimated at 1'76 pints per head of the population.

For every 100,000 inhabitants there were arraigned before the various criminal and correctional tribunals the following number of persons in each of the years from 1879 to 1887:—

Years.	Number of Persons.	Years.	Number of Persons.
1879	1,460	1884	1,459
'80	1,654	'85	1,528
'81	1,502	'86	1,565
'82	1,497	'87	1,501
'83	1,446		

The numbers of insane persons in the various lunatic asylums on the 31st December, were:—

In 1877.....	15,173, of whom 359 were inebriates, or 23 per 1,000.
„ '80.....	17,471 „ 446 „ 25 „
„ '83.....	19,448 „ 582 „ 30 „
„ '84.....	19,619 „ 553 „ 28 „
„ '88.....	22,424 „ 723 „ 32 „

In Norway the number of houses for the sale of intoxicants can only be shown for the towns. They were as follows:—

Years.	Number of Houses.	Years.	Number of Houses.
1879	1,107	1884	1,046
'80	1,070	'85	999
'81	1,143	'86	961
'82	1,081	'87	903
'83	1,036	'88	909

In 1887 there were in the rural districts 50 establishments for the sale of brandy.

According to the annual statements of trade, the consumption per head of brandy with 50 per cent. of alcohol was as follows:—

Years.	Consumption per Head. Qts.	Years.	Consumption per Head. Qts.
1873	4'92	1881	2'64
'74	6'07	'82	3'34
'75	5'72	'83	2'90
'76	5'90	'84	3'08
'77	5'28	'85	3'08
'78	3'96	'86	2'64
'79	2'90	'87	2'48
'80	3'43		

The following figures, which have been extracted from the statistics of criminal justice, represent the number of persons condemned for crimes or misdemeanours:—

Years.	Persons Condemned. No.	Years.	Persons Condemned. No.
1873	3,131	1880	3,277
'74	3,266	'81	3,318
'75	3,182	'82	3,593
'76	3,320	'83	3,185
'77	3,271	'84	3,012
'78	3,254	'85	2,803
'79	3,097		

The number of persons received in the various lunatic asylums was in:—

Years.	Number.	Years.	Number.
1873	561	1881	700
'74	547	'82	715
'75	570	'83	707
'76	638	'84	761
'77	598	'85	690
'78	528	'86	690
'79	520	'87	703
'80	571		

In the Netherlands the number of houses for the sale of drinks

has shown a considerable falling off since the year 1882, as will be observed by a reference to the subjoined statement:—

Years.	Number of Houses.	Proportion.
1882.....	32,422	1 to every 124 inhabitants
'83.....	30,283	„ 132 „
'84.....	29,900	„ 134 „
'85.....	27,945	„ 143 „
'86.....	27,107	„ 148 „
'87.....	26,921	„ 149 „

The proportional figures shown above are not absolutely accurate at the present time, as they have been based upon the last census enumeration, which relates to the year 1879, and since that date the population should certainly have increased by nearly half a million souls.

The average annual consumption of alcohol per head was 8·2 quarts during the period 1873 to 1877; 8·5 quarts from 1878 to 1882, and 8·1 quarts during the period comprised between 1883 and 1887.

The number of persons condemned at the assize courts and by the various tribunals was:—

In 1866-70 (annual average)	11,787 persons, or 356 to every 100,000 inhabitants.
„ '71-75	„ 10,223 „ 286 „
„ '76-80	„ 13,698 „ 383 „
„ '81-85	„ 16,689 „ 416 „

On the 31st December of each year the number of insane in the various institutions was:—

Years.	Number.	Years.	Number.
1866	2,995	1872	3,585
'67	3,179	'73	3,634
'68	3,295	'74	3,690
'69	3,376	'75	3,793
'70	3,334	'76	3,853
'71	3,466	'77	3,991

The returns for 1878 and subsequent years have not yet been published.

The following particulars in regard to Russia are taken from the report of M. Claude, whom we have referred to above, and also from the reports of the international inquiry instituted at Berne in the year 1884.

According to the former of these authorities, the number of taverns and drinking houses throughout the whole of the Russian empire was 145,177 in 1878, and the number of inhabitants to each house varied from 196 in Warsaw, to 973 in the north-eastern district of the empire. The international inquiry fixes for the same year the number of houses for the sale of intoxicating drinks at 181,979.

The consumption of alcohol per head of the population, according to M. Claude's report, averaged 3·47 quarts; it amounted to 5·09 quarts in Poland, to 8·02 quarts in the province of Moscow, and to 9·31 quarts in that of St. Petersburg. The lowest average, 2·37 quarts, is notified for the northern districts (five provinces) and the north-eastern district (four provinces). The international inquiry estimates the consumption of alcohol of 40 degrees per head of the population at an annual average of 8·80 quarts during the period comprised between 1873 and 1882.

There is an absence of data respecting crime and madness in Russia.

In Sweden the number of places for the sale of alcoholic beverages can only be shown in so far as regards those for which it is necessary to take out licenses. These licenses are required for every house in which spirituous liquors are sold by retail, that is in quantities below 250 litres, or 220 quarts, while the wholesale trade in spirits is perfectly free. Leaving on one side the temporary licenses, which it should be observed are very few, the number of permanent licenses have averaged annually in the towns—

In 1871-75.....	1,090, or 1 house to every 551 inhabitants.
„ '76-80.....	1,037 „ 658 „
„ '81-85.....	997 „ 771 „

In the rural districts—

In 1871-75.....	432, or 1 house to every 8,748 inhabitants.
„ '76-80.....	295 „ 12,425 „
„ '81-85.....	255 „ 15,265 „

The quantity of alcohol, including alcohol for industrial purposes, indicated by the total production and imports, deduction being made of the exports, amounts as follows, taking the annual average for the undermentioned periods:—

	Per Head of Population.	Quantity of Pure Spirit.
	Qts.	Qts.
1872-76	10·68	5·34
'77-81	8·25	4·12
'82-86	7·06	3·52

The correctional tribunals sentenced for crimes, misdemeanours, and infractions of the law during the undermentioned periods, the annual average being taken in each case, the following numbers:—

Periods.	Number of Persons Sentenced.	Number of Persons Convicted for Drunkenness.
1872-76	43,908	16,334, or 37 per cent.
'77-81	54,391	20,276 „ 37 „
'82-86	55,311	19,793 „ 35 „

The average number of the insane treated in the various lunatic asylums was, taking the daily average, for each of the undermentioned quinquennial periods—

1872-76	1,425
'77-81	1,675
'82-86	2,107

According to the last census returns there were—

In 1860.....	7,542	insane, or	19'5	per	10,000	inhabitants.
„ '70.....	8,990	„	21'6		„	
„ '80.....	11,456	„	25'1		„	

This increase should be attributed to a large extent to the greater accuracy ensured by the method of compilation of the returns.

Coming next to Switzerland, in presence of the political, administrative, and judicial organisation of the country, it will be easily understood that it is impossible to convey a general and accurate impression of the condition of that country as regards the question of alcoholism. The Federal Council, however, on the 20th November, 1884, addressed a message to the Federal Assembly on the alcoholic question, from which we extract a few particulars bearing upon the subject in hand.

In eleven cantons, from 1851 to 1882, the number of houses open for the sale of drinks increased from 8,958 to 12,004; for eighteen cantons, from 1871 to 1882, it rose from 14,050 to 16,204, and finally for the whole of Switzerland (the canton of Vaud excepted) it amounted in 1882 to 19,789, or a proportion of 1 public house to every 131 inhabitants.

The average annual excess of imports over exports as regards alcohols, brandies, liqueurs, and other distilled beverages for the undermentioned quinquennial periods was as follows. (The quantities being originally stated in weight, in the Swiss trade accounts in quintals, these have been converted into cwts.) :—

Periods.	Cwts.	Periods.	Cwts.
1851-55	70,032	1871-75.....	181,666
'56-60	75,433	'76-80.....	227,797
'61-65	91,033	'81-82.....	255,813
'66-70	92,373		

There are in Switzerland as many varieties of criminal legislation as there are cantons; it is impossible therefore to accurately determine for the whole of the country the number of persons arraigned before the different tribunals. Not only are the criminal statistics not drawn up with any idea of uniformity, but several cantons, and even the principal ones, do not publish any at all. However, for the purposes of its message, the Federal Council, desiring to know how many among the prisoners existing at a given moment in the various penal establishments had been led into crime by the influence of drink, caused inquiries to be made into this question. The result of these inquiries showed that for the

whole of Switzerland (exception being made of two prisons in the canton of Geneva), out of 2,560 prisoners, 1,030, that is to say 40 per cent. (men 43 per cent. and women 23 per cent.) were addicted to drink.

The statistics of lunatic asylums supply the following data. Out of 7,362 persons in the various institutions from 1877 to 1881, there were 923 who were victims of alcoholism: 825 men, or 21 per cent., and 98 women, or 3 per cent.

And, now it may be asked, what are these figures and estimates actually worth? It is of course extremely difficult to give for certain countries an absolutely exact idea of the number of retail liquor sellers. On the other hand, the average consumption of alcohol per head of the population is not everywhere calculated on the same basis. This may in a measure account for the discrepancy between the statement of M. Claude respecting the alcoholic consumption in Russia and that shown in the Swiss inquiry, which certainly needs some explanation. The same remark equally applies to Denmark, in which country the average consumption of alcohol is fixed in several returns at 16 quarts per head; it is, however, very evident that alcohol intended for industrial purposes enters into this calculation to a very considerable extent, perhaps for more than a quarter. Finally, we may ask is it possible to determine even approximately the effect of alcoholism on crime or insanity? It would be easy to give an opinion upon this latter point if the medical men attached to the various institutions and asylums were required by law to examine into this question, and to report accordingly to the authorities. But in so far as regards crime, how would it be possible to arrive at an accurate idea as to the extent it is influenced by excessive use of alcohol? Not, it is to be feared, under the existing legislative systems. Taking France for instance. In that country the penal laws admit drunkenness neither as an extenuation nor as an aggravating circumstance, therefore no importance is attributed to it during the course of the trial or magisterial inquiry. It is true that the jury may take the question of drunkenness into consideration when declaring that there are extenuating circumstances in the case, but as it is not necessary to declare their reasons for arriving at their decision, it is impossible to say which is the number of cases in which they have looked upon drunkenness as extenuating the culpability of the accused.

The same may be said of the police magistrates, who are perfectly able to appreciate the extent of the influence of drink upon the various actions of the persons brought before them and accused of crimes and misdemeanours, but they are not constrained to make any reference to it in giving their decisions. Under these circumstances how, it may be asked, is it possible for statistics to determine with any accuracy what is the influence of alcoholism on crime? These difficulties are still further increased when it becomes a question of drawing international comparisons.

The statistics of each country are doubtless prepared with the greatest care and accuracy, but they are none the less prepared according to the financial and economic requirements of the

country, and as these requirements are not identical throughout, it results in the divergences in the bases of the statistics, rendering comparisons very difficult, if not impossible, and in invariably depriving the deductions arrived at of a part of their value.

But be that as it may, we are of opinion the figures we have quoted above stand in no need of commentary, and that they amply suffice to prove, once again, the existence of a scourge which it behoves us all to combat by all the means in our power. It is more particularly the province of our medical *confrères* to examine into the question, and to point out the measures to be adopted to effectually stamp out this plague. As regards ourselves, our *rôle* has been confined to the collection and the compilation of statistical data, and we have endeavoured to perform our task in such a manner as to best respond to the desires of the Committee of the International Congress.

II.—Commercial History and Review of 1889.

The following is taken from the supplement to the *Economist* of 22nd February, 1890, in continuation of similar extracts for previous years:—

“At the beginning of 1889 we characterised the trade outlook as brighter than it had been for many years, and expressed the opinion that if there were no disturbance of the peace of Europe, we might confidently hope for a continuance of the gradual, but steady progress we had been making in 1888. And this favourable forecast has been fully realised. The year certainly has not been free from political disturbances. What with the unsettlement in the Balkan States, whose internal dissensions and mutual jealousies have been a constant source of anxiety, the agitation in Crete and the troubles in Armenia, if any of the great Powers had desired to reopen the Eastern Question there was no lack of opportunities. Instead, however, of taking advantage of these, all the Powers have shown a disposition to smooth over difficulties, and to avoid cause of quarrel. They have all professed a sincere desire for peace, and acted in a way which has harmonised with their professions. None of them, it is true, have in any way relaxed their war preparations. They are still vying with each other in strengthening their forces and perfecting their armaments. At the same time, however, there seems to be a growing disinclination on the part of those at the head of affairs to undertake the responsibility of war. The Governments do not trust each other, and wish to be prepared for all eventualities, but they see more and more clearly what terrible dimensions the conflict must assume, and shrink from provoking it. This is not a solid basis for peace to rest upon, but noting the success that has thus far attended the efforts to prevent the outbreak of war, people have been encouraged to hope that it will, at all events, be averted for some time to come.

"This relief from apprehensions of immediate war has had a most beneficial effect upon the trade of 1889. Its influence has, perhaps, been more felt on the continent than here, for it was there that the depression resulting from the political uncertainty was most marked. Even, however, in the improvement that has taken place there we have pretty fully participated, as is shown by the increase in our imports from, and exports to, nearly all the chief European States. And a very gratifying feature of the year's business is, that it has been comparatively free from those excesses by which periods of pronounced trade revival are so often characterised. In some few directions speculation has been carried too far. The cotton trade suffered severely in the autumn from the 'cornering' of the raw product. The speculative operations of a German syndicate drove up the price of sugar to an extravagant height in the earlier part of the year, and lately gambling in warrants has caused extreme fluctuations in the price of pig iron, and seriously unsettled many branches of trade. These attempts to manipulate markets, as well as the corner of the French copper syndicate, have, however, broken down, those who engineered them being for the most part the heaviest sufferers. And apart from them, the course of business has been singularly steady. There has been continuous expansion without inflation, the best proof of which is, that the general level of prices at the end of the year was not much higher than it was at the beginning.

"How our foreign trade increased during the year is shown by the Board of Trade returns. The figures are:—

Year.	Imports.	Exports of Home Produce.
	£	£
1889.....	427,211,000	248,092,000
'88.....	386,582,000	233,843,000
Increase	40,629,000 = 11'1 per cent.	14,249,000 = 6'0 per cent.
Increase in 1888 as compared with 1887....	6'7 per cent.	5'1 per cent.
„ '87 „ '86....	3'4 „	4'2 „

The growth in the value both of our imports and exports last year was distinctly larger than in either 1888 or 1887, which were also years of expanding foreign trade. The figures as to values, however, are, of course, affected by fluctuations in prices, and if we wish to see how quantities have moved, these price variations must be eliminated. How this can be done is shown in Appendix H, where the figures for last year are dealt with, and placing the results there worked out in conjunction with those for the previous five years, we have the following comparative statement:—

Volume of Our Foreign Trade. Increase or Decrease per Cent. as compared with previous Years.

	Imports Retained for Home Consumption.	Exports of Home Produce.	Imports and Exports.
	Per cent.	Per cent.	Per cent.
1889.....	Increase 11'25	Increase 3'71	Increase 8'08
'88.....	" 3'42	" 4'64	" 3'94
'87.....	" 5'07	" 4'80	" 4'93
'86.....	Decrease 0'37	" 5'33	" 1'94
'85.....	Increase 3'28	Decrease 3'84	Decrease 0'26

While the growth in the imports greatly exceeded that of previous years, the rate of expansion in the exports was rather less than in 1888 or 1887. The activity of our industries last year is not, however, to be measured by the figures of our foreign trade alone. There is evidence that the home trade developed more rapidly than did our trade with other countries. Take, for instance, the cotton trade. Our exports of cotton goods last year were about $2\frac{1}{2}$ per cent. less than in 1888, but our consumption of cotton in the production of manufactures and yarns was fully 16,500,000 lbs. greater. It is evident, therefore, that there must have been a decided increase in the home demand. So with iron. While we increased our exports of pig iron by 163,000 tons, we increased our home consumption by 857,000 tons, and it was by the home market also that the larger proportion of our increased production of woollen goods was absorbed. There are no comprehensive statistics of our home trade, but the records of the goods traffic on our railways afford a fairly accurate indication of the general movement. We have not yet a complete statement of railway traffics, but taking the fifteen chief companies whose accounts are summarised in the Appendix, the comparison with 1888 stands thus:—

Year.	Merchandise.	Minerals.	Merchandise and Minerals Combined.
	£	£	£
1889.....	18,091,000	13,028,100	31,119,100
'88.....	16,920,500	12,262,900	29,183,400
	1,170,500 = 7'0 per cent.	765,200 = 6'1 per cent.	1,935,700 = 6'6 per cent.

“This rate of growth compares with that of the two previous years as follows:—

Increase in Traffic Receipts.

Year.	Merchandise.	Minerals.	Merchandise and Minerals Combined.
	Per cent.	Per cent.	Per cent.
1889.....	7'0	6'1	6'6
'88.....	4'1	2'8	3'5
'87.....	1'6	3'6	2'5

“These figures show how much larger the movement of merchandise within the kingdom was in 1889 than in either 1888 or 1887, and testify to the much greater activity which prevailed in the home markets.

“In the matter of profits, also, 1889 compared favourably with previous years. That is shown by the better dividends which our industrial joint stock companies have, on the average, been able to pay. The upward movement in prices, however, was comparatively moderate. Our ‘Index Number,’ which registers the variations in the prices of a large number of chief commodities, compares with that of immediately preceding years thus:—

		‘Index Number,’ representing the Combined Prices of Twenty-two Leading Commodities.	
1st January, 1890.....	2236		
„ July, '89.....	2161		
„ January, '89.....	2187		
„ July, '88.....	2121		
„ January, '88.....	2230		
„ July, '87.....	2116		
„ January, '87.....	2059		
„ „ '86.....	2023		
„ „ '85.....	2098		
„ „ '84.....	2221		

“There was, it will be seen, a rise in the year of 49 points, or only a little over $2\frac{1}{4}$ per cent. Some allowance, however, has to be made for the abnormal drop in copper, which stood at an extravagantly inflated price at the beginning of the year, but which, after the collapse of the syndicate, has fallen again to something like its natural level. Taking this into account, the rise for the year may be set down at between $2\frac{1}{2}$ and 3 per cent. And this rise, small though it is, is greater than the average variation in the recorded prices of our imports and exports. We have already referred to the table in the Appendix, wherein the figures of the Board of Trade returns are analysed so as to show how much of the increase in recorded values was due to an enlargement of the volume of trade and how much to higher prices. And bringing the figures as to prices together in the same way as we have already done with the figures as to quantities, the comparative statement for the past five years is:—

Prices of Imports and Exports. Average Rise or Fall as compared with previous Years.

	Imports Retained for Home Consumption.	Exports of Home Produce.	Imports and Exports.
	Per cent.	Per cent.	Per cent.
1889.....	+ 1'14	+ 2'32	+ 1'61
'88.....	+ 2'89	+ 0'90	+ 2'04
'87.....	— 1'72	— 0'52	— 1'22
'86.....	— 5'67	— 5'35	— 5'53
'85.....	— 5'63	— 4'89	— 5'44
'84.....	— 6'44	— 3'96	— 5'42

“It should be remembered, in comparing the change here noted with that shown by our Index Number, that the prices here dealt with are the average for the year, whereas the Index Number shows the whole movement from the beginning to the end of the year. A feature of the import and export prices is, that while in 1888 the rise was greater in the imports than in the exports, last year it was the exports that showed the greatest rise. In other words, the rise was greater last year in what we sold than in what we bought, and that, of course, was to our advantage.

“Amongst the causes which contributed to give an impetus to our home trade last year was the bountiful harvest. The wheat crop was considerably larger than that of 1888, although the area under cultivation was smaller, the yield being fully a bushel an acre over the ordinary average. Barley was under the average in England, but over it in Ireland, and oats were over the average both in Great Britain and Ireland. The average price of wheat was very low, being 29s. 9d. for the year, as compared with 31s. 10d. in 1888. But during the past years of depression farmers have learnt how to reduce the cost of production, and can now manage to scrape a profit out of prices that would formerly have been ruinous. The average price of barley is also lower than last year, but for the malting kinds prices were well maintained, and oats sold better than for some years past. The root crops also turned out well, and the hay crop was phenomenally large. Add to this that all descriptions both of lean and fat stock fetched high prices, and enough has been said to indicate that our farmers, as a whole, fared better in 1889 than they had done for very many years before. Appended are our usual tables of prices, although their condition still leaves much to be desired:—

Gazette Average Price of Wheat (per Imperial Quarter) in United Kingdom immediately after Harvest, 1883-89, and Total Average Gazette Price of Calendar Years.

Periods.	1889.	1888.	1887.	1886.	1885.	1884.	1883.
	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.
After harvest.....	31 2	36 4	29 11	33 1	32 4	35 1	43 2
Calendar year average	29 9	31 10	32 6	31 1	32 10	35 8	41 7

Comparative Gazette Prices of Grain.

Week.	Wheat.						Barley.						Oats.					
	1889.		1888.		1887.		1889.		1888.		1887.		1889.		1888.		1887.	
	s.	d.	s.	d.	s.	d.	s.	d.	s.	d.	s.	d.	s.	d.	s.	d.	s.	d.
Aug. 3.....	30	8	33	8	33	11	19	11	19	4	20	10	20	6	18	6	17	1
10.....	30	11	34	6	33	3	19	10	24	9	20	7	19	5	18	—	16	10
17.....	30	9	35	9	32	—	19	5	18	8	23	11	19	5	18	9	16	4
24.....	30	5	36	1	30	10	19	6	21	11	24	5	18	11	20	9	16	3
31.....	31	2	36	4	29	11	24	6	26	10	27	3	19	6	19	9	15	6
Sept. 7.....	31	—	37	9	29	1	29	9	24	2	26	10	19	2	18	10	14	10
14.....	30	2	38	1	28	8	32	5	29	9	27	4	17	2	18	9	14	7
21.....	29	5	34	11	28	9	28	11	32	5	28	—	17	2	17	2	14	11
28.....	29	1	32	2	28	5	29	—	29	4	28	10	16	11	16	4	14	10
Oct. 5.....	29	3	30	7	28	7	29	4	29	1	28	6	16	8	16	3	15	1
12.....	29	4	30	11	29	3	29	8	29	1	29	—	16	8	16	4	15	3
19.....	29	10	32	1	29	9	30	4	28	10	28	10	16	4	16	10	15	4
26.....	30	4	32	2	30	1	30	11	29	5	29	7	16	11	16	5	15	5
Nov. 2.....	30	3	32	3	30	3	31	3	28	10	29	7	16	8	16	5	15	11
9.....	30	3	31	8	30	6	31	—	28	2	29	6	17	1	16	2	15	5
16.....	30	2	31	11	30	5	30	4	27	10	29	6	17	—	16	9	15	6
23.....	30	—	31	9	30	9	29	11	27	8	29	6	17	4	16	6	15	11
30.....	30	1	31	8	31	3	29	9	27	4	29	3	17	6	16	9	16	1
Dec. 7.....	30	2	31	3	31	2	30	2	27	4	29	—	17	7	16	9	15	11
14.....	30	2	30	10	31	2	29	10	27	1	29	1	17	11	16	10	16	2
21.....	30	1	30	8	30	10	30	4	26	11	28	11	18	2	16	3	15	10
28.....	29	10	30	7	30	9	30	6	26	10	29	3	18	2	16	3	16	1

“The condition of no section of the community improved so much in 1889 as did that of the working classes. For all skilled labour there was the fullest employment, and while there was an all round and substantial rise in wages, there was very little enhancement of the cost of living, most of the chief food staples being almost as cheap at the end of the year as they were at the commencement. Of this improvement, perhaps, the fullest advantage was not taken. Towards the end of the year, especially, there were frequent complaints that in some branches of trade the men were not working so steadily as they did when wages were lower, and it is not very satisfactory to find that while the increase in the aggregate savings bank deposits was smaller than it had been in any year since 1883, the consumption of beer and spirits went up with a bound. Something of this kind, however, regrettable although it be, we must always expect to find in times of reviving prosperity. There is a certain proportion of men who will not bend themselves to steady work except under the spur of necessity, and who, when the price of their labour rises, prefer to take the benefit of it rather in the form of greater relaxation than of larger earnings. Then as to the savings bank deposits, the relative slowness of the growth last year is capable of at least partial explanation. The figures for each of the past five years are:—

		January.				
		1890.	1889.	1888.	1887.	1886.
		£	£	£	£	£
Amount at credit of trustee savings banks		44,861,448	45,959,856	47,156,131	46,653,154	46,133,869
Amount at credit of Post Office savings banks		63,020,925	58,614,600	53,904,127	50,882,383	47,694,167
Total		107,882,373	104,574,456	101,060,258	97,535,537	93,828,036
Increase over previous year		3,307,917	3,514,198	3,524,721	3,707,501	3,387,052

From this it will be seen that the Post Office savings banks maintained their previous rate of progress. It is in the trustee banks that the decline is shown; and seeing how confidence in these institutions has been shaken by recent failures, the withdrawal of deposits from them is not to be wondered at. It might have been expected, however, that a larger portion of the money withdrawn would have been transferred to the Post Office banks, the security of which is beyond question, and it is because the growth in the one class of banks has not quite compensated for the decay in the other, that one sees cause to doubt whether the savings of the working classes in 1889 were commensurate with their larger earnings. Of the increased expenditure in drink, no more can be said than that it was all along evident that some of the greater abstinence shown in the late years of depression was compulsory. It resulted from lack of means rather than from lack of desire, and nothing was more certain than that as the spending power of the masses increased the drink consumption would increase also. And there is some satisfaction derivable from the fact that even the larger consumption of last year was less than it had been in previous years when the working population had less to spend. The cause of temperance has thus, it is very evident, made real progress. It is hardly necessary to say that we are not seeking to extenuate idleness, want of thrift, or dissipation. There is, however, in some quarters a disposition to speak as if our working classes were being demoralised by the greater prosperity which the past two years have brought, and it is desirable, therefore, to point out that the blots upon the past year's record are those which always appear when a trade revival is in full swing, and that, bad as they are, they are, in some respects, an improvement upon what we have witnessed at similar times before. It is somewhat the same in regard to the strikes, which were of such frequent occurrence in 1889. They are much to be regretted, and it is greatly to be desired that some better method of settling trade disputes could be devised. Something, too, is being done in that direction. Everyone knows, however, that when any market is undergoing a radical change there is always an unusual amount of haggling

between buyers and sellers, and the labour market is no exception to the rule. At times like these, therefore, we must look for strikes, and it is not wise to exaggerate their importance. Things will settle down after a little. But it is necessary to protest very strongly against the species of trade union tyranny which some of our new labour organisations are seeking to impose. They wish to prevent every man who does not bow to their dominion from earning his livelihood. That is an abuse of the freedom of combination from which the working classes themselves would be the greatest sufferers, and if persisted in, it will have to be dealt with very vigorously.

“Reference is made elsewhere to the almost unprecedented activity shown last year in the floating of new financial and industrial companies. To this, no doubt, some part of the trade improvement is due. A very large portion of the money which investors have been induced to put into these ventures have been virtually thrown away. It has gone into the pockets of promoters and vendors, and the host of financial parasites attached to them. But in connection with the new railway, mining, and such like undertakings, there has been a very large expenditure indeed in the purchase of plant, &c., which has served to give a strong fillip to certain important branches of our industry. Much of this expenditure will, it is certain, never yield an adequate return, and the ultimate effect of the waste of capital sunk in enterprises that have no chance of success must be injurious. Nevertheless, for the time it has served to send the wheels of industry revolving with increased rapidity. It would be well, however, if the adventitious impetus which company promoters have given to the trade of 1889 were to cease to operate, for it is in no small measure owing to an over large absorption of capital in new loans and undertakings that the money market has been brought into a state of stringency, which, if it were continued would do far more to check trade than company promoting has done to promote it.

“Although not unchequered, the trade prospect for the current year is, on the whole, favourable. The continued dearth of money has, as already said, impeded business of late, and in some branches of trade its restrictive effect has been very marked. That is an adverse influence which we may now hope will soon cease to operate, and meanwhile it has not been without its good results, for it has put a timely stop to speculation, which in some directions as, for instance, the pig iron market, had gone too far. The fact, moreover, that the prices of commodities have, on the average, risen so slightly is of favourable augury for the future. It promises a further expansion of consumption, which cheapness does so much stimulate. Some departments of industry, too, such as shipbuilding, and some branches of the iron trade, have already orders booked which will keep them well employed throughout the year, and their activity will tend to keep other trades moving. And further, as the rise in wages has been progressive, and is still going on, the purchasing power of the country will continue to

grow. The great danger—although it is a danger that we hope will be avoided by the display of moderation and a conciliatory disposition on the part of both employers and employed—is that the workmen may, by pushing their demands for better remuneration too far, interrupt and unsettle business, and cause such a rise of prices as would restrict demand. And the unsettled state of European politics is a factor in the situation which, though it may not press upon people's minds so heavily as before, certainly cannot be ignored.

“Amongst the incidents of the past year which call for some special notice, the completion of the national debt conversion is one of the most prominent. When Mr. Goschen commenced his operations in March, 1888, there were outstanding 558,000,000*l.* of 3 per cent. stocks, and by the end of last year the whole of this amount had either been converted or paid off, with the exception of 5,800,000*l.* of ‘stocks in court,’ and stocks belonging to savings bank depositors, which were specially continued as a book debt bearing interest at the rate of 3 per cent. until the 5th April next, when they also will be converted. In carrying out this great operation Mr. Goschen displayed consummate tact and skill, and not less remarkable than the completeness of his success is the extreme smallness of the cost at which it has been effected. The whole expense has been less than the saving of interest in a single year, and there has not, as in the case of conversion operations of foreign governments, been any augmentation of the principal of the debt to counterbalance the reduction of the rate of interest. The rush to open out Africa, which has brought us into conflict with Portugal, and which we would have been only too glad to avoid, had that been possible, and the revolution in Brazil, are other incidents bearing upon the commercial and financial situation that stand out when one looks back upon the events of 1889.

“In the early part of 1889 the course of the money market was quiet, and comparatively uneventful. At the beginning of the year the bank rate stood at 5 per cent., but by the end of January it had been reduced first to 4, then to $3\frac{1}{2}$, and again to 3 per cent. At this last figure it stood till the middle of April, when it was lowered to $2\frac{1}{2}$ per cent. Many were then of opinion that the downward movement had been rather too precipitate, and subsequent events showed that they were right. The $2\frac{1}{2}$ per cent. rate was continued to the beginning of August, when, partly because of an expansion of the internal circulation, and partly because gold was being taken for South America, it was moved up to 3 per cent. Three weeks later a further advance to 4 per cent. was found to be necessary, and as that failed to check the drain upon the bank, a movement to 5 per cent. had to be made towards the close of September. At that date the market rate for best three months' bills was within $\frac{1}{2}$ per cent. of the bank rate. Soon however outside rates gave way, and the decline was hastened later on, when gold was brought here from Russia. The market at once jumped to the conclusion that the big

finance houses, who had worked this transaction in order to facilitate certain financial operations they had in hand, would see that the market was kept easy, and they ceased to exercise due prudence. Rates were beaten down, and the result was that although the bank kept its rate at 5 per cent. until the closing days of the year, instead of gold coming hither it continued to flow away. The bank directors were, therefore, compelled in the last days of December to raise their rate to 6 per cent. This want of power on the part of the bank to make its rate effective has been increasing year by year, while every year the dependence of the outside market upon the bank has increased, because our great joint stock institutions have been gradually diminishing the proportion of their cash reserves to their liabilities. And, if serious trouble is to be avoided, one of three things must be done: Either (1) the Bank of England must seek to make itself a greater power in the market, by allowing interest on deposits and competing actively for bills; or (2) the joint stock banks must keep bigger cash reserves themselves; or (3) they must give more loyal assistance to the bank in keeping the cash reserve, upon which they depend. To us the first of these alternatives appear much the best. But some good might be done if all our joint stock banks were called upon to render weekly statements, showing, amongst other things, in separate entries, the amount of their cash in hand and the amount of their cash balances at the Bank of England. If that were done, the public would see on what a very small cash basis the banks are trying to work, and would, we feel sure, insist upon its being broadened.

“The following is our usual ten years’ record of rates:—

	1889.	1888.	1887.	1886.	1885.	1884.	1883.	1882.	1881.	1880.
Changes bank rate	8 p. ct.	9 p. ct.	7 p. ct.	7 p. ct.	7 p. ct.	7 p. ct.	6 p. ct.	6 p. ct.	6 p. ct.	2 p.
Highest „	6	5	5	5	5	5	5	6	5	3
Lowest „	2½	2	2	2	2	2	3	3	2½	2½
Average „	3/14/10	3/6/3	3/6/-	3/-/4	2/16/9	2/19/2	3/11/6	4/2/8	3/9/6	2/1/1
Average market rate best three months’ bills }	2/15/6	2/7/-	2/7/3	2/1/-	2/-/9	2/8/1	3/-/8	3/7/3	2/18/-	2/6/1
Market below bank	19/4	19/3	18/9	19/4	16/-	11/1	10/10	15/5	11/6	8/3

“The rates of discount at the various continental centres during the year are shown in the following table:—

European Rates of Discount per Cent. per Annum, 1889.

Cities.	First of Months of 1889.												Avge.
	Jan.	Feb.	Mar.	April.	May.	June	July.	Aug.	Sept.	Oct.	Nov.	Dec.	
<i>London.</i>													
Bank rate	5	3	3	3	2½	2½	2¼	2½	4	5	5	5	3·55
Open market	3½	2	2¾	1¾	1¾	1¾	1¾	2¼	3½	4¼	4	3¾	2·70
<i>Paris.</i>													
Bank rate	4½	3½	3	3	3	3	3	3	3	3	3	3	3·18
Open market	4¼	3	2¼	2½	2¼	2¼	2½	2½	2¼	2½	2¾	2¾	2·65
<i>Vienna.</i>													
Bank rate	4½	4	4	4	4	4	4	4	4	4	4	5	4·12
Open market	4½	3¾	3	3½	3½	3	3½	3½	4	4	4	5	3·73
<i>Berlin.</i>													
Bank rate	4½	4	3	3	3	3	3	3	4	5	5	5	3·70
Open market	2¾	1¾	1½	1½	1½	1¾	1¾	2	3	4	4½	4½	2·70
<i>Frankfort.</i>													
Bank rate	4½	4	3	3	3	3	3	3	4	5	5	5	3·70
Open market	3	1¾	1½	1¾	1½	1¾	1¾	2	3	4½	4¾	4¾	2·65
<i>Amsterdam.</i>													
Bank rate ...	2½	2½	2½	2½	2½	2½	2½	2½	2½	2½	2½	2½	2·50
Open market	2¼	1¾	1¾	2¼	2¼	2	2¼	2½	2¼	2¼	2¼	2¼	2·15
<i>Brussels.</i>													
Bank rate	5	4½	3½	3½	3	3	3	3	3	4	4	4	3·62
Open market	4¼	3½	3½	3½	2¾	2¼	2¾	2¾	2½	3¾	3½	3½	3·10
<i>Hamburg.</i>													
Bank rate	4½	4	3	3	3	3	3	3	4	5	5	5	3·70
Open market	2¾	1½	1½	1½	1¾	1¾	1¾	1¾	2¾	4	4½	4½	2·45
<i>St. Petersburg</i>													
Bank rate	6	6	6	6	6	6	6	6	6	6	6	5½	5·96
Open market	6¾	6¾	5¼	5¼	5¼	5	6	6	6	6	6	6	5·85

“The course of the silver market in 1889 is thus succinctly summarised by Messrs. Pixley and Abell: ‘During the first eight months of the year the price of silver ruled very low and slight fluctuations occurred between $42\frac{3}{4}d.$ and $41\frac{1}{16}d.$ Some orders were in force part of this time for Japan, and towards April orders were received on mint account. The demand for home coinage proved to be of large dimensions, and continued practically without cessation throughout the year. The amount coined was 2,244,926*l.*, exceeding by nearly a million any previous year’s coinage. In August, considerable interest was taken in the probable course of silver legislation in the United States, and large amounts were purchased both speculatively and for India. The price accordingly rose fairly steadily, and although a somewhat sudden drop took place when Mr. Windom’s views were published, it did not prove lasting, and the price recovered to $44d.$ at the end of the year.’

Monthly Fluctuations in Price of Bar Silver.

	1889.		1888.		1887.		1886.		1885.	
	d.	d.	d.	d.	d.	d.	d.	d.	d.	d.
January	42 $\frac{11}{16}$	42 $\frac{3}{8}$	44 $\frac{9}{16}$	44 $\frac{1}{4}$	47 $\frac{1}{8}$	46 $\frac{1}{4}$	47	46 $\frac{7}{8}$	49 $\frac{3}{8}$	50
February	42 $\frac{5}{4}$	42 $\frac{1}{2}$	44 $\frac{3}{16}$	43 $\frac{13}{16}$	47	46 $\frac{5}{16}$	46 $\frac{15}{16}$	46 $\frac{1}{2}$	48 $\frac{13}{16}$	49 $\frac{9}{16}$
March	42 $\frac{5}{8}$	42 $\frac{1}{4}$	43 $\frac{3}{4}$	43	46 $\frac{7}{16}$	44 $\frac{5}{16}$	46 $\frac{7}{8}$	46 $\frac{11}{16}$	49	49 $\frac{3}{16}$
April	42 $\frac{5}{16}$	42 $\frac{1}{16}$	42 $\frac{7}{8}$	42 $\frac{1}{2}$	44 $\frac{9}{16}$	43 $\frac{3}{4}$	46 $\frac{11}{16}$	46	48 $\frac{3}{8}$	49 $\frac{7}{8}$
May	42 $\frac{1}{4}$	41 $\frac{15}{16}$	42 $\frac{3}{8}$	41 $\frac{5}{8}$	43 $\frac{3}{4}$	43 $\frac{7}{16}$	46	44 $\frac{3}{4}$	48 $\frac{5}{16}$	50
June	42 $\frac{3}{16}$	42	42 $\frac{1}{2}$	42	44 $\frac{1}{4}$	43 $\frac{11}{16}$	45 $\frac{3}{8}$	44 $\frac{11}{16}$	49	49 $\frac{3}{16}$
July	42 $\frac{5}{16}$	42	42 $\frac{5}{16}$	42	44 $\frac{7}{16}$	43 $\frac{7}{8}$	44 $\frac{9}{16}$	42	49 $\frac{1}{8}$	49 $\frac{1}{4}$
August	42 $\frac{9}{16}$	42 $\frac{1}{4}$	42 $\frac{1}{8}$	41 $\frac{15}{16}$	45 $\frac{1}{4}$	44 $\frac{1}{4}$	42 $\frac{5}{8}$	42	48 $\frac{7}{16}$	49 $\frac{7}{16}$
September	42 $\frac{11}{16}$	42 $\frac{3}{8}$	44 $\frac{3}{16}$	42 $\frac{1}{16}$	45	44 $\frac{7}{16}$	45	42 $\frac{5}{8}$	47 $\frac{1}{4}$	48 $\frac{3}{8}$
October	43 $\frac{1}{2}$	42 $\frac{5}{8}$	42 $\frac{3}{8}$	42 $\frac{7}{8}$	44 $\frac{3}{4}$	43 $\frac{11}{16}$	45 $\frac{7}{8}$	44 $\frac{1}{2}$	47 $\frac{1}{4}$	47 $\frac{5}{8}$
November	44 $\frac{3}{8}$	43 $\frac{1}{8}$	43 $\frac{1}{8}$	42 $\frac{7}{8}$	43 $\frac{5}{16}$	43 $\frac{3}{8}$	49	45 $\frac{7}{8}$	47 $\frac{5}{16}$	47 $\frac{1}{2}$
December	44 $\frac{3}{8}$	43 $\frac{3}{4}$	42 $\frac{5}{8}$	42 $\frac{5}{16}$	45 $\frac{5}{8}$	43 $\frac{3}{16}$	46 $\frac{3}{8}$	45	46 $\frac{7}{8}$	47 $\frac{1}{2}$
Yearly avge.	42 $\frac{11}{16}$		42 $\frac{7}{8}$		44 $\frac{5}{8}$		45 $\frac{3}{8}$		48 $\frac{5}{8}$	
Highest price	44 $\frac{3}{8}$		44 $\frac{9}{16}$		47 $\frac{1}{8}$		46 $\frac{7}{8}$		50	
Lowest „	41 $\frac{5}{16}$		41 $\frac{5}{8}$		43 $\frac{1}{4}$		42		47 $\frac{1}{4}$	

“ We take from the *Investor's Monthly Manual* the following record of the new loans and companies issued during the year :—

“ The aggregate amount of the issues of new loans and new companies during 1889 was unprecedentedly large, though the actual borrowings by foreign States were upon a small scale. There were, it is true, large conversion loans for Russia, Brazil, and the Argentine Government; but these added little to the capital sum of the debts of those countries. The Indian and Colonial Governments borrowed a little over 13 millions, the detailed figures being as follows :—

	Minimum Price of Issue.	Amount of Loan.	Amount Subscribed.	Average Price.
	£	£	£	£ s. d.
Cape of Good Hope 4 $\frac{1}{2}$ } per cent.	107	500,000	1,505,800	110 3 1
Indian 3 per cent.	99	3,500,000	9,052,000	101 1 5
New South Wales 3 $\frac{1}{2}$ } per cent.	102	3,500,000	3,876,000	102 8 -
South Australian 3 $\frac{1}{2}$ per } cent.	100	1,317,800	{ 553,700 764,100	100 4 5 Par.
Tasmanian 3 $\frac{1}{2}$ per cent.	97	1,000,000	2,195,100	98 5 8
Victoria 3 $\frac{1}{2}$ per cent.	100	3,000,000	6,558,500	103 6 -
West Australian 4 per cent.	107 $\frac{1}{2}$	100,000	136,900	108 15 3

“ The only important loans for British local government purposes was the Local Loans issue of 2 $\frac{1}{2}$ millions, and the 1 million loan raised by the London County Council. Among foreign borrowers generally, the Argentine Republic took something like 10 millions for railway and other industrial enterprises, and Mexico, Brazil, and Chili came to this country for smaller amounts. Railway enterprises of one sort and another represent over 24 millions, viz., 11 $\frac{1}{2}$ millions for undertakings in South America, Central America, and Mexico, 6 $\frac{1}{2}$ millions for Indian and colonial

companies, nearly 4 millions for United States railways, and about 2 millions for other railway undertakings in Europe and Asia. Over seventy mining companies were floated more or less successfully, the nominal capital exceeding 4 millions; in addition to which several South American development and exploration companies were started. The mining companies just referred to include only a few of the ventures whose shares were among the chief inducements to gambling for the greater part of the year; the latter are mostly of local origin and local incorporation. There were a large number of companies started here for mining in South Africa, but most of them have not attracted very much attention. The two sets of companies which found most favour with investors and speculators were trust and debenture corporations, in which the vicious system of founders' shares has usually been a conspicuous feature—as in the Trustees', Executors', and Securities Insurance and Debenture Corporations—and British, American, and foreign brewery shares. The trust and investment concerns represent something like 30 millions of capital, American, Canadian, and foreign breweries account for about 20 millions, and British breweries for about $8\frac{1}{4}$ millions, so that the two classes of undertakings absorbed almost 60 millions, or nearly one-third of the total. The following is a statement of the new capital created in this country in the past twelve years, from which it will be seen that this year's aggregate is greatly in excess of that of any year in the period specified:—

	Capital Created and Issued.			Actual Money Calls.		
	In England.	England and Elsewhere.	Total.	In England.	England and Elsewhere.	Total.
	£	£	£	£	£	£
In 1889...	178,930,038	28,107,000	207,037,038	152,012,254	15,791,885	167,804,139
" '88....	140,758,000	19,497,000	160,255,000	125,864,000	11,388,000	137,252,000
" '87....	96,770,000	14,439,000	111,209,000	84,161,000	9,507,000	93,668,000
" '86....	93,946,000	7,927,000	101,873,000	70,342,000	17,134,000	87,476,000
" '85....	55,558,000	22,414,000	77,972,000	62,824,000	15,051,000	77,875,000
" '84....	91,520,000	17,511,000	109,031,000	74,255,000	16,348,000	90,603,000
" '83....	69,650,000	11,500,000	81,150,000	63,600,000	13,300,000	76,900,000
" '82....	95,300,000	50,250,000	145,550,000	62,150,000	32,500,000	94,650,000
" '81....	97,800,000	91,600,000	189,400,000	63,400,000	51,850,000	115,250,000
" '80....	69,900,000	52,300,000	122,200,000	42,200,000	35,400,000	77,600,000
" '79....	50,900,000	5,570,000	56,470,000	38,180,000	9,280,000	47,460,000
" '78....	40,150,000	19,150,000	59,200,000	36,200,000	14,200,000	50,400,000

“The expansion of business on the stock exchange during the year 1889 is indicated by the fact that the bills and cheques cleared at the bankers' clearing-house on the stock exchange pay-days during the year amounted to 1,272,741,000*l.*, or 68,980,000*l.* more than in 1888, whilst upon consol pay-days the clearings amounted to 351,690,000*l.*, or 19,220,000*l.* more than in 1888. Except during the last few weeks, business was active throughout almost the whole of the year, and as will be seen from the tables of variations which we give in the Appendix, although prices did

not close at the highest points touched, they showed a considerable advance on those ruling at the end of the previous year. Amongst the very highest class of securities, quotations were generally firm, although New Consols ('Goschen's') closed slightly lower than they opened, and 2 per cent. lower than the highest point they had touched. The consol conversion scheme was completed during the year, and the old Three per Cents removed from the list. The value of both Bank of England and Bank of Ireland stock was enhanced considerably. Colonial stocks were largely bought, and English Corporation stocks were well supported, a feature in this market being the successful issue of the new London County Council $2\frac{1}{2}$ per cent. loan. Heavy advances were made during the year amongst the British railway stocks, both ordinary and debenture. The latter not only shared in the general rise in first class securities, but received further strength by reason of the large purchases made by trust companies. Very satisfactory traffic returns encouraged the support of the ordinary stocks, and expectations of greatly increased dividends—which to a certain extent have been fulfilled—led to much speculation. This was especially the case with 'Brighton A's,' which, owing largely to the Paris Exhibition, again formed a centre of interest amongst railway speculators. Early in the autumn the labour movement throughout the country aroused fears that even if the railways were not directly affected by the prevailing strikes, the increased cost of labour and material would considerably increase working expenses. The year would have been a quiet one in the foreign department had it not been for the sudden overthrow of the Brazilian empire, and the uncertainty which ensued as to the character and stability of the provisional government which established itself. Egyptian and Turkish securities both advanced considerably, although the former were affected by the continued refusal of France to sanction the conversion of the preference debt. The Russian, Brazilian, and Argentine Governments each issued conversion loans during the year, with the object of reducing the interest on portions of their debts. The American railroad market did not receive its average amount of attention. During the earlier months of the year rate wars raged, but later on the revival of trade in the United States had a favourable effect. Features of the closing months in the American department were the many combinations between the different companies, and the introduction of the Aitchinson reorganisation scheme, which was so strenuously opposed. Foreign railways generally improved during the year, except in the case of Argentines—which, owing to over speculation and the depreciation of the paper currency, relapsed—and Brazilians. The general tendency of the prices of miscellaneous shares was upward, bank, insurance, tramway, omnibus, and brewery shares all moving, generally speaking, in that direction. There were, however, movements in the other direction. South African mines were extravagantly supported at one time, but afterwards fell heavily. Nitrate shares exhibit a heavy fall, when the closing prices of 1889 are compared with those of 1888."

The following is the table of contents of the "Commercial History and Review of 1889," with Appendix:—

Trade Conditions in 1889—Volume of Trade—The Movement in Prices—Agriculture—The Condition of the Working Classes—The Prospect—Industrial Investments—National Debt Conversion—The Money Market—Silver—New Capital Commitments—The Stock Markets.

Trade Reports.

The Corn Trade—The Cattle Trade—Preserved Meat—Colonial and Foreign Produce—Wines and Spirits—Raw Materials—Metal and Coal Trades—Shipbuilding and Shipping—Textiles.

Appendix.

Wholesale Prices of Commodities in London and Manchester: Average of Six Years, 1845-50; Selected Dates, 1869-88; and Monthly, 1889—Wholesale Prices, 1845-89: Proportionate Results—Bank of England—Banks of France, Germany, Austria, and Belgium—London Bankers' Clearing House Returns—Banking Deposits in the United Kingdom—The Foreign Trade of the United Kingdom—Our Foreign Trade of 1889 Compared with that of 1888—Railway Traffic Receipts in 1889 and 1888—The Stock Markets.

III.—*Prices of Commodities in 1888 and 1889.*

By A. SAUERBECK, ESQ.

IN the following I give the result of the last two years, and of the average of the decade 1878-87 as compared with the standard period of eleven years 1867-77, which in the aggregate is equivalent to the average of the twenty-five years 1853-77 (see the Society's *Journal*, 1886, pp. 592, 593, and 648):—

	Index Numbers, 1867-77 = 100.			Average Decline as compared with 1867-77.	
	Average, 1878-87.	1888.	1889.	Average, 1878-87.	1889.
				Per cent.	Per cent.
Vegetable food (corn, &c.)	79	67	65	21	35
Animal food (meat and butter)	95	82	86	5	14
Sugar, coffee, and tea	76	65	75	24	25
All food	84	72	75	16	25
Minerals	73	78	75	27	25
Textiles	71	64	70	29	30
Sundry materials	81	67	68	19	32
All materials	76	69	70	24	30
All forty-five commodities	79	70	72	21	28
Silver (60·84 <i>d.</i> per oz. = 100)	82	70·4	70·2	18	29·8

The improvement noticeable in 1888 has not only continued, but has made further progress, and the index number has risen to 72, as against 70 in 1888, 68 in 1887, and 69 in 1886. Silver, on the other hand, has again slightly receded, the number for 1889 being 70·2, against 70·4, 73·3, and 74·6 in the three preceding years. The average index number for silver was therefore lower last year than that for commodities.

It might have been expected that, owing to the general improvement in trade, last year's average would have been still higher, but a number of articles remained on a low level, particularly English wheat, which at 29s. 9d. was lower than in any year since 1761. Barley, maize, potatoes, tea, flax, silk, lead, hides, tallow, oils, soda, nitrate, and indigo were all cheap, and copper and tin showed a considerable reduction from the extravagant prices in 1888. Cotton has experienced a steady, though moderate, improvement during the last three years, but its price is still comparatively low. Of animal food, beef and butter scarcely varied, but mutton and pork were somewhat higher. The main rise, however, was in iron and coals, coffee and sugar, wool, hemp, jute, and timber, although the highest prices were in most cases not maintained. The rise was partly due to speculation, the most so in the case of sugar, where it carried in the first half of last year the price of beet from 14s. to 28s., after which it dropped again to under 12s. per cwt.

The monthly movements of the average index number of all the forty-five commodities were thus:—

January, 1888....	70·9	October, 1888....	72·4	July, 1889....	72·6
February, „	70·6	November, „	72·7	August, „	71·4
March, „	69·9	December, „	73·2	September, „	72·1
April, „	69·8	January, 1889....	72·6	October, „	72·1
May, „	68·1	February, „	73·5	November, „	73·7
June, „	67·4	March, „	72·1	December, „	73·7
July, „	69·0	April, „	72·0		
August, „	70·1	May, „	71·4	January, 1890....	73·2
September, „	71·9	June, „	71·6	February, „	72·7

The following figures give in each case the average index number of ten years:—

1868-77	100	1873-82	93	1877-86	82
'70-79	97	'74-83	90	'78-87	79
'71-80	96	'75-84	87	'79-88	78
'72-81	95	'76-85	85	'80-89	76

The number of 72 in 1889 was therefore 28 per cent. below the period 1867-77, 9 per cent. below 1878-87, but only $5\frac{1}{2}$ per cent. below the last ten years.

In the price tables I have also given the average prices of the ten years 1878-87, which may be useful for a comparison. In looking at the general course of prices, and the state of trade, it appears to me that the year 1887 fitly closes a period in which prices had gradually sunk to the lowest level on record during the last hundred years. In 1888 trade improved, and that year may commence another period of gradually rising, or at least more

stable prices. As we have seen during the last few years, some articles may, through speculation or some special causes touching their supply and demand, be carried to a point approaching or even exceeding the highest prices of former periods, but the general price level of all commodities will never return to that of the twenty-five years 1853-77, unless a thorough change in the value of the standard with which we measure prices should occur.

The arithmetical mean of the forty-five index numbers of the various commodities, which is 72 in 1889, against 70 in 1888, has again been subjected to two tests:—

Firstly, by using the same index numbers of the separate articles, but calculating each article according to its importance in the United Kingdom, when the mean for 1889 is 71·8 against 68·8 in 1888.

Secondly, by calculating the quantities in the United Kingdom at their actual values (the production on the basis of my price tables, the imports at Board of Trade prices, and consequently a considerable portion according to a different set of prices) and at nominal values on the basis of the average prices from 1867-77. The result in this case is 72·3 against 69·2.

In both cases the figure for 1889 corresponds as nearly as possible with the mean of the index numbers, but the advance on 1888 is somewhat greater, as the rise has taken place in some very important articles, such as iron, coal, wool, and sugar, while in 1888 the improvement was in smaller articles, such as copper, tin, &c.

The following table gives the figures which have served for the second test (see also the *Society's Journal*, 1886, pp. 613—19):—

Movements of Forty-five Commodities in the United Kingdom (Production and Imports).

	Estimated Actual Value in each Period.	Nominal Values at Average Prices of 1867-77, showing Increase in Quantities.	Movement of Quantities, 1848-50 = 100.	Movement of Quantities from Period to Period.	Ratio of Prices according to this Table, 1867-77 = 100.
	Mln. £'s and dec.	Mln. £'s and dec.			
Avgc. 1848-50	219·8	294·8	100	—	74·6
„ '59-61	350·1	382·7	130	30% over 1849	91·5
„ '69-71	456·6	484·6	164	27% „ '60	94·2
„ '74-76	537·8	538·4	183	—	99·9
„ '79-81	489·7	578·5	196	19% over 1870	84·6
„ '84-86	445·7	610·1	207	—	73·0
1887.....	423·1	627·7	213	—	67·4
'88.....	443·2	640·8	217	—	69·2
'89*	491·1	679·1	230	17% over 1880	72·3

* 1889 subject to correction after publication of the complete mineral produce returns.

The nominal values at the uniform prices of 1867-77 show the exact movement of quantities in the aggregate. The result of last year must certainly be called satisfactory, as it shows an advance on 1888 of 6 per cent. in quantity, of nearly 11 per cent. in the total value, and of 4½ per cent. in prices.

Prices of Commodities.

Number of Article.		Average Prices.				Index Nu 1867-77 =
		1867-77.	1878-87.	1888.	1889.	1888.
0	Silver d. p. oz.	58 $\frac{1}{4}$	50	42 $\frac{7}{8}$	42 $\frac{11}{10}$	70·4*
1	Wheat, English gazette sh. p. qr.	54 $\frac{1}{2}$	40	31/10	29/9	58
2	„ American „	56	43 $\frac{1}{2}$	37	35	66
3	Flour, town made white sh. p. sack	46	34 $\frac{1}{2}$	30	29	65
4	Barley, English gazette sh. p. qr.	39	31 $\frac{1}{2}$	27/10	25/10	71
5	Oats, „ „	26	21	16/9	17/9	64
6	Maize, American mixed „	32 $\frac{1}{2}$	25	23 $\frac{1}{2}$	20	72
7	Potatoes, good English sh. p. ton	117	102	80	80	69
8	Rice, Rangoon cargoes..... sh. p. cwt.	10	8	7/1	7/3	71
1-8	Vegetable food (corn, &c.). Total.....	—	—	—	—	536
9	Beef, prime d. p. 8 lbs.	59	55 $\frac{1}{2}$	48	47	81
10	„ middling „	50	46	39	39	78
11	Mutton, prime „	63	64 $\frac{1}{2}$	58	63	92
12	„ middling..... „	55	53	47	50	85
13	Pork, average (large and small) „	52	49	40	43	77
14	Bacon, Waterford sh. p. cwt.	74	71	61	66	82
15	Butter, Friesland, fine „	125	116	100	102	80
9-15	Animal food. Total.....	—	—	—	—	575
16A	Sugar, West Indian refining sh. p. cwt.	23	17	13	16	} 57
16B	„ beet, German, 88 p. c. f.o.b.... „	24	18	13 $\frac{3}{4}$	16 $\frac{1}{2}$	
17	„ Java, floating cargoes..... „	28 $\frac{1}{2}$	21 $\frac{1}{2}$	16	19	
18A	Coffee, Ceylon plantation, low } „	87	78	80	95	92*
	„ middling..... „					
18B	„ Rio, good channel..... „	64	52	64	76	100*
18	„ total „	—	—	—	—	96
19A	Tea, Congou common d. p. lb.	11 $\frac{1}{4}$	6 $\frac{3}{4}$	4	4 $\frac{1}{4}$	36*
19B	„ average import price { d. & dec.	} 17 $\frac{1}{4}$	12 $\frac{3}{4}$	10·99	10·86	64*
19	„ total { per lb.					
16-19	Sugar, coffee, and tea. Total.....	—	—	—	—	259
1-19	Total food „	—	—	—	—	1,370
20	Iron, Scotch pig sh. p. ton	69	46	39/11	47/9	58
21	„ bar £ p. ton	8 $\frac{1}{4}$	5 $\frac{1}{2}$	4 $\frac{7}{8}$	6 $\frac{1}{4}$	59
22	Copper, Chili bars „	75	55	81	51	108
—	„ English tough cake „	81	60	78	54	—
23	Tin, Straits „	105	89	117	93	111
24	Lead, English pig..... „	20 $\frac{1}{2}$	14	13 $\frac{7}{8}$	13	68
25	Coals, Wallsend Hetton in London.. sh. p. ton	22	16 $\frac{3}{4}$	16 $\frac{1}{2}$	17 $\frac{1}{2}$	75
26	„ average export price..... „	12 $\frac{1}{2}$	9	8·41	10·21	67
20-26	Minerals. Total „	—	—	—	—	546

* Figures not included in the general average. Silver compared with 60·84*d.* per being the parity between gold and silver at 1 : 15 $\frac{1}{2}$.

Prices of Commodities—Contd.

	Average Prices.				Index Numbers, 1867-77 = 100.	
	1867-77.	1878-87.	1888.	1889.	1888.	1889.
Cotton, middling Uplands d. p. lb.	9	6	5 ⁹ / ₁₀	5 ¹ / ₁₀	62	66
" fair Dhollerah "	6 ³ / ₄	4 ¹ / ₄	3 ⁷ / ₈	4 ¹ / ₈	58	61
Flax, St. Petersburg 12 head best £ p. ton	46	33	29	28	} 61	60
" Russian, average import "	48	34	28	28		
Temp, Manilla fair roping "	43	35 ¹ / ₂	37	50	} 81	97
" St. Petersburg clean "	35	26 ¹ / ₂	26	26		
Wool, good medium "	19	15	13 ¹ / ₄	15	70	79
Wool, merino, Port Phillip, average } d. p. lb.	21 ¹ / ₄	18 ¹ / ₂	15 ³ / ₄	17 ¹ / ₂	} 72	82
fleece }						
" merino, Adelaide, average } "	9 ⁷ / ₈	8 ³ / ₈	7	8 ¹ / ₄		
grease "						
" English, Lincoln half hogs "	19 ³ / ₄	11 ³ / ₄	10 ³ / ₈	11	53	56
Wool, Tsatlee sh. p. lb.	23	15	13	13 ¹ / ₂	57	59
Textiles. Total.....	—	—	—	—	514	560
Hides, River Plate dry d. p. lb.	9	8 ⁵ / ₈	6 ³ / ₄	6 ¹ / ₄	} 73	70
" salted "	7	6 ³ / ₄	4 ⁷ / ₈	5		
Leather, crop hides, 30—45 lbs..... "	16	15	14	13 ¹ / ₂	87	84
Gallow, St. Petersburg Y.C. sh. p. cwt.	45	41	36	38	} 71	72
" town..... "	45	35 ¹ / ₂	28	27		
Oil, palm £ p. ton	39	32 ¹ / ₂	22	25	56	64
" olive £ p. tun	50	40	36	35	72	70
" linseed £ p. ton	30	23	18 ¹ / ₂	20	} 63	69
Seeds, linseeds sh. p. qr.	60	46	39	42		
Petroleum d. p. gall.	12 ¹ / ₂	6 ⁷ / ₈	6 ¹ / ₂	5 ³ / ₄	52	46
Soda, crystals sh. p. ton	92	62	48	51	52	55
Sulphate of soda sh. p. cwt.	14	12 ¹ / ₂	10	9 ¹ / ₂	71	68
Indigo, Bengal, good consuming sh. p. lb.	7 ¹ / ₄	6	4 ³ / ₄	4 ¹ / ₂	66	62
Timber, hewn, average import sh. p. load	60	47	41	47	} 74	84
" sawn or split, average import .. "	54	47	44	49		
Sundry materials. Total.....	—	—	—	—	737	744
Total materials	—	—	—	—	1,797	1,831
Grand total	—	—	—	—	3,167	3,252
Consols, 3 per cent. (2 ³ / ₄ per cent. } per cent.	93 ¹ / ₄	99 ¹ / ₂	101	98		
from 1889)						
Bank of England rate of discount... "	3 ² / ₁₀	3 ² / ₁₀	3 ³ / ₁₀	3 ⁶ / ₁₀		
London market rate of discount } "	2 ⁹ / ₁₀	2 ⁵ / ₁₀	2 ⁴ / ₁₀	2 ³ / ₄		
(best bills)..... }						
Wheat harvest in the United Kingdom (an } average harvest of 28 bushels per acre } = 100)	94	98	100	107		

IV.—*Fires in London during the Year 1889, and the Metropolitan Fire Brigade.*

THE following particulars are taken from Captain Shaw's Report to the Fire Brigade Committee of the London County Council, in continuation of similar notices for previous years:—

“The number of calls for fires, or supposed fires, received during the year has been 3,131. Of these 594 were false alarms, 199 proved to be only chimney alarms, and 2,338 were calls for fires, of which 153 resulted in serious damage, and 2,185 in slight damage.

“These figures only refer to the regular calls for fires, or supposed fires, involving the turning out of firemen, fire engines, fire escapes, horses, coachmen, and pilots; they do not include trifling damages by fires which were not sufficiently important to require the attendance of firemen; neither do they include the ordinary calls for chimneys on fire, which are separately accounted for further on.

“The fires of 1889, compared with those of 1888, show an increase of 350; or compared with the average of the past ten years, an increase of 267.

“The following table gives the result both in actual numbers and percentages:—

Year.	Number of Fires.			Percentages.		
	Serious.	Slight.	Total.	Serious.	Slight.	Total.
1866.....	326	1,012	1,338	25	75	100
'67.....	245	1,152	1,397	18	82	100
'68.....	235	1,433	1,668	14	86	100
'69.....	199	1,373	1,572	13	87	100
'70.....	276	1,670	1,946	14	86	100
'71.....	207	1,635	1,842	11	89	100
'72.....	120	1,374	1,494	8	92	100
'73.....	166	1,382	1,548	11	89	100
'74.....	154	1,419	1,573	10	90	100
'75.....	163	1,366	1,529	11	89	100
'76.....	166	1,466	1,632	11	89	100
'77.....	159	1,374	1,533	10	90	100
'78.....	170	1,489	1,659	10	90	100
'79.....	159	1,559	1,718	9	91	100
'80.....	162	1,709	1,871	9	91	100
'81.....	167	1,824	1,991	8	92	100
'82.....	164	1,762	1,926	9	91	100
'83.....	184	1,960	2,144	9	91	100
'84.....	194	2,095	2,289	9	91	100
'85.....	160	2,110	2,270	7	93	100
'86.....	151	1,998	2,149	7	93	100
'87.....	175	2,188	2,363	7	93	100
'88.....	121	1,867	1,988	6	94	100
'89.....	153	2,185	2,338	7	93	100

“The number of fires in the metropolis in which life has been seriously endangered during the year 1889 has been 141; and the number of these in which life has been lost has been 38.

“The number of persons seriously endangered by fire has been 184, of whom 140 were saved, and 44 lost their lives. Of the 44 lost, 30 were taken out alive, but died afterwards in hospitals or elsewhere, and 14 were suffocated or burned to death.

* * * * *

“The number of calls for chimneys has been 1,574. Of these

460 proved to be false alarms, and 1,114 were for chimneys on fire. In these cases there was no attendance of engines, but only of firemen with hand-pumps.

"The number of journeys made by the fire engines of the brigade has been 33,769, and the total distance run has been 68,060 miles.

"The quantity of water used for extinguishing fires in the metropolis during the year has been just 20 million gallons, or about 93,000 tons. Of this quantity, about 50,000 tons, or considerably more than one-half of the whole, was taken from the river, canals, and docks, and the remainder from the street pipes.

"During the year there have been 9 cases of short supply of water, 9 of late attendance of turncocks, and 10 of no attendance, making altogether 28 cases in which the water arrangements were unsatisfactory.

"As long as any portion of the metropolis has an intermittent supply of water, such cases must necessarily occur; but very little injury has resulted during the past year from imperfect water supply, and the water companies invariably make every possible effort to obviate the defects.

"I have as usual to express my warmest thanks to the metropolitan and city police, both of which forces have rendered most valuable aid to the brigade during the past year.

"The strength of the brigade is as follows:—

55	land fire engine stations.	2	trolleys for engines.
4	floating or river "	11	hose and coal vans.
27	hose cart stations.	8	waggons for street duties.
146	fire escape "	7	street stations.
7	steam fire engines on barges.	122	watch boxes.
48	land steam fire engines.	707	firemen, including chief officer, second officer, superintendents, and all ranks.
78	six-inch manual fire engines.	16	pilots.
17	under six-inch manual fire engines.	67	coachmen.
31½	miles of hose.	131	horses.
80	hose carts.	72	telephones between fire stations.
1	self-propelling fire float.	55	alarm circuits round fire stations, with 365 call points.
7	steam tugs.	21	telephones to police stations.
11	barges.	10	telegraphs } to public and other
174	fire escapes.	41	telephones } buildings.
9	long fire ladders.	15	bell-ringing fire alarms to public and other buildings.
9	ladder vans.		
2	" trucks.		
1	trolley for ladders.		

* * * * *

"The number of firemen employed on the several watches kept up throughout the metropolis is at present 111 by day and 264 by night, making a total of 375 in every twenty-four hours; the remaining men are available for general work at fires.

"Our list of wounds and other injuries for 1889 is heavy; but when the work is well done this is generally the case.

"There have been during the year 220 cases of ordinary illness, and 104 injuries, making a total of 324 cases, of which many were very serious, and 2 resulted in death.

* * * * *

"A reference to the figures in this report will show that the total number of calls, including those for actual fires, supposed fires, chimney fires, and supposed chimney fires, has been 4,705, or just 13 a day, all of which have been attended by firemen with suitable appliances.

"In addition to attending fires, the brigade has kept 136,875 watches of twelve hours each, has made 24,735 hydrant inspections, has maintained all the machinery and appliances of the establishment in working order, written several thousand reports and letters, and carried on a variety of other work.

"The work of the year has been decidedly heavy, and there were times when the energies of the brigade were severely taxed; but all ranks have worked cheerfully, and I think I may say very successfully."

* * * * *

The following particulars (*a, b, c*) are obtained from the tables appended to the report, viz.:—

(*a*) The fires classified according to occupations, arranged in the order of frequency of occurrence; to which are added, for the purpose of comparison, the corresponding figures for the three previous years:—

Number.	Occupations.	Number of Fires.			
		1889.	1888.	1887.	1886.
1	Private houses	580	494	594	535
2	Lodgings	361	277	320	297
3	Victuallers	70	68	46	51
4	Grocers	45	34	43	49
5	Oil and colourmen	44	45	41	41
6	Boot and shoe makers	42	38	28	46
7	Stables	37	13	23	18
8	Builders	35	20	30	26
9	Coffee houses	35	29	38	26
10	Under repair and building	35	24	35	14
11	Tailors, clothiers, and outfitters	31	36	29	33
12	Bakers	30	31	26	22
13	Tobacconists	25	22	32	26
14	Cabinet makers	23	20	27	21
15	Unoccupied	22	25	23	32
16	Confectioners and pastrycooks	21	25	23	27
17	Printers	20	19	17	26
18	Refreshment rooms	20	19	22	15
19	Engineers and machinists	19	10	11	11
20	Warehouses	19	9	19	14
21	{ Carpenters and workers in wood, not cabinet makers	18	3	13	13
22	Furniture makers and dealers	18	14	24	13
23	Greengrocers and fruiterers	18	36	29	20
24	Chandlers	17	18	24	20
25	Corn dealers	17	13	15	17
26	Hotels (including club houses)	17	27	19	14
27	Butchers	16	14	17	9
28	Chemists	16	7	13	8

Number.	Occupations.	Number of Fires.			
		1889.	1888.	1887.	1886.
29	Fried fish shops	16	11	19	16
30	Fishmongers	15	8	13	9
31	Laundries	15	11	15	6
32	Hairdressers	14	12	14	14
33	Milliners and dressmakers	14	11	7	11
34	Offices	14	27	21	20
35	Booksellers, binders, and stationers.....	13	11	20	19
36	Public buildings (not theatres)	13	7	6	16
37	China, glass, and earthenware dealers	12	9	8	13
38	Contractors.....	12	13	10	6
39	Dairymen	12	8	7	7
40	Ironmongers	12	9	10	9
41	Beershop keepers	11	14	16	14
42	Hatters	11	7	11	11
43	Churches and chapels	10	3	6	1
44	Farming stock	10	18	26	12
		1,876	—	—	—
Remainder, varying from 9 to 1		462	—	—	—
		2,338	—	—	—

(b) The fires classified under the causes to which they have been assigned, and arranged in the order of frequency of occurrence:—

Causes.	Number of Fires.
1. Unknown	717
2. Lamps (not gas) and lights (thrown down)	454
3. Gas (in various ways)	190
4. Defective, or improperly set—flues, hearths, stoves, &c.	178
5. Sparks from fires, &c.	155
6. Candles	136
7. Children playing with fire, matches, &c.	93
8. Overheating of—flues, ovens, furnaces, boilers, stoves, &c.	66
9. Airing linen and drying stoves	64
10. Hot ashes	60
11. Boiling over, or upsetting of fat, pitch, &c.	43
12. Foul flues, &c.	39
13. Lucifer matches.....	23
14. Gas stoves, portable, overheating of, goods falling on.....	23
15. Smoking tobacco	20
16. Lime slaking by rain and otherwise	16
17. Spirits, or vapour of spirits, in contact with flame	13
18. Doubtful.....	9
19. Spontaneous ignition.....	8
20. Fireworks	5
Miscellaneous, varying from 3 to 1.....	26
Total	2,338

(c) The following table, giving the totals of the fires for each day of the week for the last ten years, shows on the average that the largest number of fires occur on Saturday and the smallest number on Monday. The annual average number of fires for the last ten years is 2,133:—

Years.	Sunday.	Monday.	Tuesday.	Wednesday.	Thursday.	Friday.	Saturday.	Total.
1880....	288	262	253	259	254	266	289	1,871
'81....	270	267	315	288	279	253	319	1,991
'82....	285	246	296	267	281	274	277	1,926
'83....	297	334	309	318	269	295	322	2,144
'84....	296	330	304	335	338	340	346	2,289
'85....	331	319	321	338	326	300	335	2,270
'86....	294	293	294	317	306	304	341	2,149
'87....	327	297	352	336	357	292	402	2,363
'88....	288	273	267	295	299	272	294	1,988
'89....	318	281	363	305	384	337	350	2,338
Total...	2,994	2,902	3,074	3,058	3,093	2,933	3,275	21,329

V.—German Literature in 1888 and 1889.

THE following is taken from the *Publishers' Circular* of the 15th February, 1890:—

“The exchange sheet of the German book trade for 29th January, 1890, gives the following table of the literary productions of the German book trade in the years 1888 and 1889, compiled by the J. C. Hinrichs' Book Store in Leipzig:”—

	1888.	1889.
1. Collected works—literary, science, bibliography.....}	430	482
2. Theology	1,623	1,582
3. Jurisprudence, politics, statistics, trade.....	1,490	1,549
4. Healing art, veterinary art	1,108	1,248
5. Natural science, chemistry, pharmacy	876	852
6. Philosophy.....	156	188
7a. Pedagogy, German school-books, gymnastics	1,957	2,083
7b. Juvenile books	494	591
7c. Educational publications for the female sex....	16	28
8. Old classical and oriental languages, archæo-logy, mythology.....}	588	644
9. Modern languages, old German literature	543	591
10. History, biographies, memoirs, correspondence	842	892
11. Geography, travels	505	534
12. Mathematics, astronomy	195	228
13. Science of war, home management	427	525
14. Science of trade, technical science.....	749	840
15. Architecture, engineering, railway, science, } mining, navigation	448	383
16. Forestry and sport	117	109
17. House and land management, gardening	429	430
18. Belles-lettres (novels, poetry, drama, &c.)	1,423	1,715
19. Fine arts (painting, music, &c.), shorthand	670	768
20. Popular literature, almanacks.....	780	723
21. Freemasonry	23	22
22. Miscellaneous	753	558
Maps	374	421
Total	17,016	17,986

VI.—*English Literature in 1889.*

THE following particulars are taken from the *Publishers' Circular* of the 31st December, 1889, in continuation of a series of similar extracts for previous years:—

“In commenting on the analytical table of books published during 1888, which we printed on the last day of that year, we found occasion to remark on the exceptional literary activity to which it bore witness. The figures for 1889 are not quite so large, but still they mark a production of between 300 and 400 books more than we had to count up and classify in 1887. In other words, the statistics go to show that the past year has produced about one work *per diem*, Sundays included, more than the output of 1887. Comparing or contrasting the number of publications in 1889 with those of 1888, we find in theology a slight decline, both in new books and in new editions. In educational works, also, 1889 has fewer works to show than its predecessor. Books for young people, on the other hand, show a good increase. Of novels and stories there are noted no less than 1,040 new books, besides 364 new editions. This gives the ardent novel reader as many as three new novels for each week-day, with a balance to spare, and one new edition for every day. We have to note a slight decline in the class of political economy, also in that of arts and sciences; but after all, many a book published in the new year will be the product of this and preceding years' labours. In ‘voyages and travels,’ ‘history and biography,’ and in ‘poetry,’ the figures of 1889 are less than those of 1888. Here, again, it may be worth while to reflect that statistics do not convey everything—a Du Chaillu's *Viking Age* ‘outweighs a whole theatre of others.’ And while the show of books in poetry of 1889 is numerically less than that of 1888, it is greater than that of 1887 by about 50 new books and 10 ‘new editions’—an excess of just 50 per cent. ‘Belles-lettres’ may be pointed to as the only division of literature in which the number of new editions exceeds that of *bonâ fide* new books. It will be readily understood that this exception is due to the numerous and continual reprints of the great classics.

Analytical Table of Books Published in 1889.

Subjects.	Jan.	Feb.	Mar.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Total Books or Subj. for the
Theology, sermons, biblical, &c. }	* 24 † 3	67 8	48 15	36 13	76 14	40 5	21 5	29 13	34 8	43 9	63 15	149 26	630 134
Educational, classi- cal, and philo- logical	* 19 † 3	63 14	42 11	45 6	41 9	36 14	31 8	24 3	36 10	35 11	47 10	138 25	557 124
Juvenile works and tales	* 7 † 1	4 —	1 —	14 4	11 1	10 5	6 4	17 4	26 —	108 37	114 19	100 18	418 93
Novels, tales, and other fiction	* 33 † 9	64 35	76 38	80 26	116 32	77 27	58 34	52 34	63 33	93 25	94 16	234 55	1,040 364
Law, jurisprudence, &c. }	* 5 † 1	6 4	5 1	3 5	8 3	— 1	— —	2 —	— 2	1 1	3 —	33 22	66 40
Political and social economy, trade and commerce }	* 4 † —	7 1	12 3	14 —	13 2	7 1	9 —	7 —	4 1	5 1	10 3	18 4	110 16
Arts, science, and illustrated works }	* 4 † 5	8 2	4 1	5 3	10 6	8 4	9 —	11 2	5 —	4 2	17 1	27 8	112 3
Voyages, travels, and geographical research..... }	* 2 † 1	13 2	6 6	13 2	16 9	20 4	19 9	15 7	4 3	16 4	34 4	45 6	203 57
History, biography, &c..... }	* 9 † 7	27 8	19 7	18 9	26 16	19 10	14 6	23 1	15 8	29 12	49 15	62 15	310 114
Poetry and the drama /	* 7 † 1	5 6	5 2	9 4	5 5	10 4	7 4	8 8	9 3	9 3	6 5	53 9	133 54
Year - books and serials in volumes }	* 33 † —	48 —	22 —	18 1	20 —	14 —	17 —	13 —	6 —	24 2	36 —	86 1	342 4
Medicine, surgery, &c..... }	* 2 † 1	9 6	10 3	17 5	6 9	4 1	6 3	7 1	5 6	8 —	13 5	46 9	133 49
Belles-lettres, essays, monographs, &c. }	* 8 † 9	10 19	8 15	20 15	13 15	11 10	4 13	11 14	9 8	11 10	22 23	30 32	157 183
Miscellaneous, in- cluding pamphlets, not sermons..... }	* 26 † 1	45 10	26 8	20 11	38 13	32 11	35 6	19 8	32 5	32 3	47 7	131 24	483 107
	230	491	394	416	533	385	328	333	335	538	678	1,406	

* New books.

† New editions.

“The analytical table is divided into fourteen classes; also new books and new editions.

Divisions.	1888.		1889.	
	New Books.	New Editions.	New Books.	New Editions.
Theology, sermons, biblical, &c.....	748	164	630	134
Educational, classical, and philological....	630	149	557	124
Juvenile works and tales.....	357	113	418	93
Novels, tales, and other fiction	929	385	1,040	364
Law, jurisprudence, &c.	115	57	66	40
Political and social economy, trade and } commerce	111	24	110	16
Arts, sciences, and illustrated works.....	184	69	112	34
Voyages, travels, geographical research ..	224	73	203	57
History, biography, &c.	377	109	310	114
Poetry and the drama.....	163	68	133	54
Year-books and serials in volumes	324	3	342	4
Medicine, surgery, &c.	126	73	133	49
Belles-lettres, essays, monographs, &c. ...	165	224	157	183
Miscellaneous, including pamphlets, } not sermons	507	120	483	107
	4,960	1,631	4,694	1,373
	6,591		6,067	

VII.—Notes on Economical and Statistical Works.

Recent Economic Changes, and their Effect on the Production and Distribution of Wealth and the Well-being of Society. By David A. Wells. London: Longmans, Green, and Co., 1890.

This book of the well-known American economist might be described as an outcome of recent discussions on currency matters. The argument that the fall in the gold-prices of commodities, which has been experienced of late years, is due to causes originating in connection, not with the precious metal itself, but with the circumstances attending the production of commodities —this argument, whatever may or may not be its real validity and significance, has at least had the result that it has attracted attention to the important and varied economic changes of recent times; and it has had the additional result that Mr. Wells has been led to expand into the present volume the articles which he contributed to the *Contemporary Review* in 1887. The book is then in some measure an expansion of the articles, and may therefore be said to be the outcome of monetary controversy. But it is also more than that; for, although Mr. Wells enforces in detail his views on monetary questions, and expresses at length his opinion of the weakness of the bimetallic position, he embraces within the scope of his book topics of wider interest. The recent economic changes which he describes are, in his opinion, “more important and varied” than any that have occurred “during any former corresponding period of the world’s history.” In the first chapter of the volume he reviews the “disturbance” of trade, commerce, and industry which began in 1873, and, with passing intervals of

reviving prosperity, has lasted until 1889, the year in which he is writing. He dwells on its "universal" character; but he maintains that the feeling of depression has been most intense in those countries where "the employment of machinery, the efficiency of labour, the cost and standard of living, and the extent of popular education are the greatest," and that its intensity has been at the minimum in backward countries where the opposite conditions prevail. He enumerates the many causes which have been suggested for it, and he notices the undue stress which has been naturally laid in different countries on causes which are merely "local" and "secondary" in character, and he insists on the inadequacy of such explanations as those found in general over-production, which should be regarded as a "result rather than a cause," or in monetary or tariff changes, which must have been "prompted" by "antecedent conditions." What then, he asks in his second chapter, is the true and adequate cause? and he answers that it is a revolution in the conditions of production and transportation. It would seem, he states, as if until recently the world had been gradually equipping itself for industrial effort, and as if it had now suddenly brought its "equipment" into play. During the lifetime of the generation ending with 1885, mankind in general has attained to a much greater control, and a much more efficient use, of the forces of nature. The opening of the Suez Canal has been accompanied by a revolution in the conditions of transport and communication between the East and the West; in carriage by water and by land there has been an immense economy of labour and the material of motive power; in very many industries the displacement of labour by machinery has been effected on a vast scale; and although, as he urges in his endeavour to strengthen that part of his argument which is obviously most open to attack, there may have been influences of a similar character at work in previous ages, those of recent years are different in "degree." In a third chapter he proceeds to argue that the other causes which have been suggested, such for example as over-production, or changes in the relations of capital and labour, group themselves—so far as they are not merely local—as "secondary" and "derivative" consequences of this one great cause. In the fourth chapter, by an examination into the circumstances and conditions of production of certain important commodities the prices of which have fallen, he endeavours to show that that fall is due to the changes on which he has been dwelling, and not to changes connected with gold itself. He maintains that of these two alternative explanations, the former is the simpler, and the evidence in its support can be stated with precision; while the latter invokes the aid of an extraordinary agency, and rests on "indefinite" and "conjectural" evidence. He arranges the commodities into which he inquires in two groups, the first including sugar, petroleum, copper, iron, quicksilver, tin, tin-plates, nickel, lead, coal, quinine, paper, rags, chemicals, meats, cheese, fish, and freights; and here the evidence that the decline of price has been the "direct resultant" of new conditions of production and distribution is, he insists, "full, clear, and unimpeachable." As regards the second group, which consists of wheat, cotton, wool,

silk, and jute, it is "more or less inferential and circumstantial." He next attempts in his fifth chapter to corroborate his contention by inquiring into the conditions of production attending those articles, such as corals, hops, diamonds, hides, and leather, the prices of which have not fallen. He maintains that products which are largely the result of handicrafts and not of machinery, have not declined in price; nor have prices fallen in countries like India, of "low or stagnant civilisation," which have not participated, to the same extent at any rate, in the general improvement of the means of production and transportation. Nor again, he urges, is there any satisfactory evidence of a "scarcity" of gold; and the tendency of the times is, he argues, to use less and less of coins as mediums of exchange. In chapter vi he reviews the facts and theories of the recent changes in the relative values of the precious metals, and he adheres himself to the old belief that the results of monetary changes can be but transitory, and that international, as domestic, trade is in its essence an exchange of commodities for commodities. In chapter vii he examines into the hindrances presented to trade by protective tariffs, and other similar methods of governmental interference. He notices the fact that there has been, in some measure, a retrograde movement in this direction of recent years, and he devotes special attention to the interesting reflections suggested by the question of the sugar bounties. In the four concluding chapters he considers the future, and surveys the economic "outlook." He admits that at first sight this might appear to be discouraging; but, as he has before contended, the economic changes of recent years are different in degree from past experience, but are similar in kind. Many of the features of the situation, considered by themselves, may be "disagreeable," may even be "appalling;" but they are the incidents of an evolution from a worse to a better condition. And there are compensating circumstances. The fall of prices places useful and desirable commodities within the reach of a larger number of persons; the Malthusian theory is robbed, not of its truth, but of its discouraging conclusions, and the supply and variety of food available for the masses have become incomparably greater. The real remuneration of labour is undoubtedly rising, and wealth and comfort are more widely diffused; and, whatever question may be raised about the rate at which these tendencies are operating, the fact of their existence is beyond dispute. There may indeed be, as Mr. Wells shows in his ninth chapter, discontent on the part of labour; for machinery has displaced it, for a time at least, in some processes; changes in the character and nature of some employments, consequent on the introduction of new processes, have in some instances tended to lower its grade, and restrict its mental development; and—and this is perhaps the most important consideration, and it is by no means discouraging—there has been an increase in intelligence and general information on the part of the masses. In the eleventh and final chapter of his book Mr. Wells sums up the chief results of what he has set forth in detail in the preceding chapters; and he arrives at the general conclusion that the immense material progress entailed by the changes of

recent years has been for mankind a general movement upward and not downward; and it will compare, he adds, in importance with the periods succeeding the Crusades, or the discovery of gunpowder, or the emancipation of thought through the Reformation, or the invention of the steam engine—periods when the whole plane of civilisation rose to a higher level, accompanied, it is true, by social disturbance of great magnitude, but by disturbance exercising only temporary influence, and ultimately productive of more good than evil consequence. Some perhaps of Mr. Wells's conclusions, like this, may not commend themselves entirely to all his readers, but of this there can be no doubt, that he has produced a very interesting volume on a very important topic; and that those who disagree with him will have to deal with a vast array of facts which have been handled with masterly ease.

Le Progrès de la Science Économique depuis Adam Smith—revision des doctrines économiques. Par Maurice Block. Paris: Guillaumin et Cie., 1890.

In these two volumes M. Block makes an elaborate survey of the whole field of economic science. He reviews the course and results of the chief lines of inquiry since the days of Adam Smith, who, as he remarks, following his immediate predecessors, the Physiocrats, in their consolidation of detached ideas into a body of doctrine, refuted their principal errors, and explained and confirmed theories by the evidence of facts. For half a century the *Wealth of Nations* retained the position of the classical treatise on the subject; every economist of standing belonged to the school of its great author, and Malthus, Ricardo, and Say, while they added and amended on points of detail, did not attempt to alter the fundamental bases; and they exercised an influence compared with which that of Sismondi and other opponents was imperceptible. But, as M. Block proceeds to point out, the rise of Socialism, of Robertus, Lassalle, and Marx on the one hand, and of the Socialists of the Chair on the other, disturbed the supremacy of Adam Smith; and the time has now come when it is possible, with some chance of success, to revise his teaching in the light of subsequent discussion and inquiry. Accordingly, in successive sections of his book, he reviews the different departments of economic science. In an introduction, he discusses in one chapter such general questions as those connected with the relations of science and art, and of theory and practice, the foundation of economics in induction and deduction, in reasoning and experience, the place of hypothesis, and the connection of economics with ethics. In a second chapter he deals with the important topics of definition and classification. He then, in the first section of the book, proceeds to treat of the fundamental notions of the science—of human needs, of goods, of value, of economic laws and principles, of the relations of the individual and the State. In the four succeeding sections he reviews the different departments of economic theory under the traditional divisions of production, exchange, distribution, and consumption; and, in a concluding chapter, he furnishes a *résumé* of the answers suggested

by this detailed review to the question propounded at the beginning of the book—the question of the progress of the science since the days of Adam Smith. He arrives at the conclusion that, despite of the noisy declarations of some writers, that the “old masters” have been refuted and displaced, in reality the older doctrines have undergone very little change of substance. The doctrines of to-day are in substance those of Adam Smith and of J. B. Say; they have indeed been modified and amended, but they have not been overthrown or refuted.

M. Block is not, however, a blind or bigoted adherent of any one school of opinion. He states in his preface that he has now studied the subject for nearly fifty years; that he has, during that period, consulted all the leading economic books which have been written in the chief European languages; that he has followed the periodical literature of the times; that he has acquainted himself with the results of inquiry in cognate branches of knowledge; that he has observed facts; that he has sought the truth and endeavoured to avoid prejudice, and that his book is the result of long preparation. The method he pursues is to divide every chapter into two parts. In the first of these parts he endeavours to set forth the actual state of the science, not the mere *obiter dicta* or particular conclusions of any individual writer, but those truths which may fairly be held to be established; and with this statement he incorporates the results of his own reflection and observation. In the second part of each chapter illustrative passages are given in small print, selected from different writers, and generally commencing with Adam Smith, who is, however, sometimes preceded by the Physiocrats and other previous writers, and is followed, in the first place, if there be occasion, by Malthus and Ricardo, and then, in successive order, by French, by modern English and American, by German, by Italian, and by other writers.

M. Block's book is, therefore, a storehouse of economic knowledge. It may claim to be thorough, if not exhaustive; for if we take, for example, the topic of money, we find that he gives a summary of views as old as those of Aristotle, of Nicole Oresme, and of Jean Bodin; and, if we turn to the chapter on capital, we are supplied with an account of the chief conclusions of so recent a work as that of M. de Böhm-Bawerk. Nor, again, can M. Block's book be accused of giving only one side of a question, for while he may himself accept one conclusion in the first portion of a chapter, he does not fail to give an explicit account of the opposing views in the second. His own opinions, moreover, are judicial and cautious. He does justice, as we have seen, to the older theories, and he is not prepared to abandon them without prolonged consideration. He subjects the newer theories to a severe scrutiny, and he does not adopt them with any rash haste. But on the other hand he recognises the need and the value of improvement and addition, if it only be characterised by sobriety and admit of proof. His bias is perhaps in favour of the older teachers, but this is a bias which in these days of hasty and wholesale denunciation of their work in some quarters, and of reluctant acknowledgment of

it in others, might well be pardoned; and he supplies, as we have seen, the means of his own refutation, if refutation be needed, in the second parts of his chapters.

Des Crises Commerciales et de leur retour périodique en France, en Angleterre, et aux États-Unis. Par Clément Juglar. (Deuxième édition.) Paris: Guillaumin et Cie., 1889.

There are two characteristics of modern commerce and industry by which it may be said to be specially distinguished from commerce and industry in ancient and mediæval times; and it is the combined results of these two characteristics which form the subject of M. Juglar's well-known book, originally published many years ago, and which is now reproduced in a second and much amplified edition. One of the characteristics is the development of credit, and the other the system of production on a large scale. Each of the characteristics is, as M. Juglar shows, in a sense necessary to the existence of the other; for the system of production on a large scale could scarcely be prosecuted with success, were it not for the intervention of credit, and the development of credit could hardly be possible apart from the opportunities presented for it in the magnitude of modern business undertakings. And, in a similar way, the evils attaching to either of the two characteristics are intensified by those connected with the other. The system of production on a large scale implies production for distant markets, and therefore implies also the possibility of miscalculation of demand. But the depression of industry occasioned thereby is intensified by the existence of credit; for credit is of a sensitive and elastic nature, and contracts with as much ease and rapidity as it expands. And hence it is, as M. Juglar shows, that one of the most prominent features of modern commerce and industry is the recurrence of commercial crises—of times, that is, when credit has contracted, and production is disorganised.

These commercial crises recur, M. Juglar argues, with remarkable regularity. It may not be possible to estimate with exactitude the interval elapsing between one and another; and Jevons' well-known hypothesis of decennial periods was perhaps fanciful. It may not be possible to determine with certainty what cause will in every event occasion a commercial crisis; and M. Juglar shows, by an examination of the different opinions put forward upon this point, the variety of the circumstances which may just turn the scale on different occasions, and the insufficiency of any one of the suggested causes, taken alone, to produce under all conditions the result in question, with the single exception of such a general and secondary cause as the arrest of the rise of prices. But on the other hand there does appear to be a "cycle," as Lord Overstone styled it, in commercial and industrial affairs. The study of statistics has been of undoubted use in indicating a general movement of prices upwards and downwards at recurring intervals; and M. Juglar regards the history of trade as a history which repeats itself—a history of three periods succeeding one another in regular order, a period of prosperity, a period of crisis and a period of liquidation, which must be distinguished from the period of prosperity, and is a

time when trade is slowly ridding itself of its disastrous entanglements, and steadily recovering a healthy condition. The common characteristics, again, of a commercial crisis, like its recurring regularity, can be easily recognised, however varied may be the circumstances which occasion it. They are a contraction of credit, a feeling of depression, a decline of prices, an eagerness to obtain and to rest content with cash alone. Prices fall, and among these those of Government stock, of which continuous statistics are available over long periods of time; the rate of discount rises, for more people desire monetary accommodation; the rate of bankruptcy increases, for more people fail to meet their monetary engagements. The remedies, once more, suggested by different writers for commercial crises, are as varied as the causes to which the crises themselves are ascribed; but they have, M. Juglar points out, this feature in common, that as yet they have failed to prevent the recurrence of the evil. It seems, as he shows, to be *à priori* probable that commercial crises should be the necessary incidents of modern industry, for credit is widely extended, and is also wonderfully sensitive, and the causes which give birth to a period of prosperity tend to set in operation influences which will probably result in a period of depression. This theoretical conclusion is, he shows, confirmed by fact; for the solidarity of modern commerce is strikingly shown by the recurrence, almost simultaneously, of commercial crises, in the three great countries where commerce is most fully developed and a series of reliable statistics is available, the countries of England, France, and the United States. M. Juglar, in fact, after setting forth the theoretical side of the question in the first part of his treatise, and describing the nature and origin of commercial crises, their features, and the suggested remedies for them, proceeds in the second and historical part of the book to make an elaborate and detailed inquiry into the incidents of each crisis in England, in France, and in the United States during the course of this century. In the case of the first country he even goes back to the foundation of the Bank of England at the close of the seventeenth century. In the third section of the book he examines into the relations between commercial crises and the general economic condition of a country, and he shows that an inquiry into the incidents and results of crises is one means, and a very efficient means, of obtaining an insight into the material state of a nation. The volume ends with a series of graphic tables exhibiting the movements in the various items of the accounts of the Bank of France somewhat similar to those relating to the Bank of England constructed by Jevons. M. Juglar indeed maintains that it is only by means of frequent consultation of general tables of statistics that it is possible for us to penetrate to the real mechanism of commercial crises, and to understand their development, their culmination, and the liquidation by which they are followed.

La France Économique. Par A. de Foville (année 1889). Paris: Armand Colin et Cie., 1890.

The edition for 1889 of this handbook of French statistics has

been enriched by the incorporation of some additional matter, but the general conception and method of the book remain unaltered. In the different chapters M. de Foville brings together successively the statistics of the area and character of the soil of France; of the distribution, the movement, and the composition by sex, by age, by religion, by nationality, and by profession, of the population; of the amount and distribution of landed and other property; of the system of cultivation, the character of the crops, and the variations in the wages of agricultural industry; of the numbers of domestic animals; of the production and consumption of wine, cider, beer, and alcohol; of the extent and value of the forests; of the course of movement in manufacturing industry, in mining and metallurgy, in the textile and other trades; of the changes in French commerce, domestic and foreign; of the character and development of transport facilities by land and by water; of the postal and telegraphic system; of the varieties of money, metallic and paper, and the changes of credit and banking; of the national finances, the budget, the public revenues, the direct and indirect taxes, and the public domains; of the administration of local finance; of the growth of indebtedness and the accumulation of wealth; and of the state and progress of the French colonies.

Such an exhaustive compendium of statistics as this could hardly fail to possess many interesting features; and the interest of the book is considerably increased, not only by the occasional use of the graphic method of presentation, but also by the summary comparison with other countries which is generally appended to each separate section. It is interesting, for example, to find (p. 14) that in France, as elsewhere, the urban population is growing, partly at least, at the expense of the rural; that (p. 337) in French shipping, as in that of other countries, there has been a substitution of vessels of larger for those of smaller tonnage; that (p. 36) in France, as elsewhere, the average duration of life is increasing; and that (pp. 100, 196) in this, as in other communities, in agricultural and manufacturing industry alike, there has been a steady rise in the remuneration of labour. It is curious again to discover (p. 48) that in the arrangement by age of the French population, the number of those at the fifth stage of life—the period extending from 20 to 25 years of age—is greater than the number of those at the fourth stage—that extending from 15 to 20—in consequence of the reduction in the number of births occasioned at the time of the Franco-German war; and that, in the case of women, those of 20 to 25 years of age are more, and those of 25 to 30 less numerous than we should have expected, owing to the feminine disinclination to return a correct age. Nor is it uninteresting to note the effect (p. 163) of the phylloxera on the production of wine, and the growth of the system of *metayage* (p. 96) during the recent agricultural depression. But M. de Foville's work, abounding as it does in interesting facts and suggestive reflections, has other qualities. It exhibits a high ideal of statistical work. As he says in his preface, he holds the belief that one figure explained is worth two unexplained; and, when he is aware that a figure is doubtful or faulty, he considers it his duty to say so. And hence

he does not scruple to criticise either official statistics or private statisticians. The readers of this *Journal* will remember the criticism of Mr. Mulhall's statistical method which was made by M. de Foville, and they will not be astonished to find in this book (p. 151) a note in which Mr. Mulhall, "que rien n'embarrasse," is quoted as assigning 77 rabbits per 100 inhabitants to England, and 186 per 100 to France, and stating that England eats 20 millions of rabbits a year, and France 70 millions. They will be exceedingly grateful to M. de Foville for the scrupulous precision he maintains himself throughout, for the carefulness with which he draws a conclusion, and the fulness with which he sets forth the evidence for it, and the frankness with which he describes its true character. The selection for example of the 30th of May as the date of the last French census, is, M. de Foville thinks, unfortunate; for that month is not, like December, a month in which railway statistics exhibit the movements of people from place to place at a minimum. Nor, in his opinion, is the division of the work of the census between two ministerial departments, that of the Interior and that of Commerce and Industry, other than inconvenient and faulty; and yet, for all that, he ungrudgingly allows that the last French census will constitute an epoch in France in such investigations, on account of the abundance of the material collected, and the originality of the suggestions made and the views propounded. It is this discriminating method of employing material which is the most obvious and pervading characteristic of M. de Foville's manual; and it is this especially which gives it its value.

Album de Statistique Graphique. Nancy: Berger-Levrault et Cie., 1889.

This volume, which is published under the authority of the French Ministry of Commerce and Industry, exhibits the different features of the population of France by means of the graphic method of statistics. The general method of presentation adopted is that of maps of France differently coloured and shaded; but these maps, which number in all some eighty-eight, are followed by other varieties of the graphic method. We have diagrams to show the composition of the French population at the census of 1886, by age, by sex, etc. We have curves to show the number of births, marriages, and deaths per 1,000 inhabitants from the year 1806 to 1885. The album might in fact be described as on the one hand affording a fairly complete series of illustrations of the graphic method; and, on the other, as supplying a tolerably exhaustive account of the population of France. The increase and decrease of the populations of the different arrondissements during the course of the century, the proportion in the various departments at the census of 1886 of those of French, of those of Swiss, of Spanish, of Italian, of Belgian, of German, and of English birth; the number of children to a family; the number of the married and unmarried; the occupations of the people, in agriculture, industry, transport, commerce, the civil and military services, the liberal professions, and the idle leisured classes, are shown by means of differently coloured and shaded maps in the first part of the album,

which is devoted to the condition of the population at the last census. In the second the movement of population in 1885 is similarly exhibited—the births, the deaths, the marriages, and the consumption of alcohol, wine, beer, and cider; the number of fires, of floods, of frosts, and of hail storms, and the damage caused thereby. In the third part a series of studies is furnished on the French population during the twenty years from 1867 to 1886, illustrating such facts as the instruction of the imbecile, the number of legitimate and illegitimate children, the proportion of the still-born, the mortality of infants, and the number of centenarians; and in the fourth and concluding part the number of Frenchmen abroad in Europe, in Asia, in America, and in Africa, so far as information can be procured, is shown.

A Dictionary of the Economic Products of India. By George Watt. Calcutta: 1889.

This dictionary of the economic products of India is published under the authority of the department of revenue and agriculture of the Indian Government. The secretary to the department, Sir Edward Buck, explains in the first of two prefaces prefixed to the dictionary the circumstances which have led to its publication. The collection of agricultural and commercial products for the Paris Exhibition in 1877, for the Melbourne Exhibition in 1880, for the Amsterdam Exhibition in 1883, and for the Italian and Belgian governments, resulted in the "gradual compilation of a list of the more important economic products of India." But the list was incomplete and unscientific; and it was not until the Calcutta Exhibition of 1883-84 that the services of the editor of the dictionary, Dr. George Watt, were procured. Under his direction a collection of greater completeness and better arrangement was formed for the exhibition at Calcutta; and the prospect of a further collection being required for the London Exhibition of 1886 led to the retention of his services and the compilation of the present work. And so, although the task is one which the agricultural department of the Indian government might well have regarded as incumbent upon it apart from the requirements of any exhibition, yet, as Sir Edward Buck remarks, "the utility of exhibitions in forwarding the performance of the duty should not escape attention." The dictionary professes to be, as the editor states in a second preface, "an approximately complete *résumé* of the opinion of Indian authors and of extensive official and private enquiries." The sources of information are supplied in each instance, and, "in most cases," an entire list of the works consulted. A "twofold purpose" has been kept in view throughout; on the one hand an attempt is made to furnish scientific information which will be of use to the "administrative officer," and on the other the editor endeavours to "meet the requirements of the reader in search of definite information regarding Indian economics." He hopes that "something may have been done to advance the material interests of India, and to bring the trade and capital of the West into more direct contact with the resources of the Empire." The economic products belonging to the animal and

mineral kingdoms are, it is true, “imperfectly touched upon,” and the brief notices of the minerals have been supplied by the superintendent of the Geological Survey. The fact again “that the *Flora of British India* is not yet complete, prevents the botanical part of the dictionary from escaping a repetition of some of the errors of the older botanical writers; and in some instances “the opinions of authors even when apparently conflicting have been placed side by side;” and, lastly, in a future edition the vernacular names will have to be “revised and confirmed.” But, on the other hand, the catalogues mentioned before as prepared for the various exhibitions, have been distributed to Indian officials in all parts of the empire for “addition and correction,” and the information thus obtained has been incorporated in the present work; and the editor has secured the valuable assistance of the highest authorities in correcting the vernacular names, and in adding to the various classes of material, botanical, medical, and commercial. The dictionary is arranged alphabetically, and the arrangement based on the “scientific names of the animals, plants, and minerals.” In the case of large products obtained from more than one species, such for example as silk, the subject has been treated collectively, and not separately under the names of the insects which yield the different kinds of silk; but cross references are supplied to avoid confusion. On the margin a number for each product is given to facilitate correspondence and arrangement in museum collections; and the editor concludes his preface by remarking—and remarking with justice—that the printer, working with a staff possessing no more than an “imperfect knowledge of the English language,” has shown that he “can produce an elaborate work,” “in a manner worthy of a high-class European press.”

VIII.—Additions to the Library.

Additions to the Library during the Quarter ended 31st March, 1890, arranged alphabetically under the following heads:—(a) Foreign Countries; (b) India, Colonial and other Possessions; (c) United Kingdom and its several Divisions; (d) Authors, &c.; (e) Societies, &c. (British); (f) Periodicals, &c. (British).

Donations.	By whom Presented.
(a) Foreign Countries.	
Argentine Republic—	
Datos trimestrales del Comercio Exterior. Año 1889. No. 63	National Department of Statistics
Province of Buenos Ayres—	
Registro Estadístico de la Provincia de Buenos Aires. 1876 y 1880. 2 vols., fol.	The Provincial Statistical Bureau
Censo Agrícola-Pecuario. 1888 . . . 8vo.	
CITY OF BUENOS AYRES. Boletín mensual de Estadística municipal. Oct.—Dec., 1889	The Municipal Statistical Bureau
Boletín del Instituto Geográfico Argentino. Tomo x, Cuaderno 10. Map, 8vo. 1889	The Institute

Donations—Contd.

Donations.	By whom Presented.	
(a) Foreign Countries—Contd.		
Austria and Hungary—		
<i>Oesterreichische Statistik—</i>		
Band xxii. Heft 2. Statistik der Sparcassen für 1887	The Central Statistical Commission	
Band xxiii. Statistik des auswärtigen Handels der österreichisch-ungarischen Monarchie im Jahre 1888. Heft 2. Waaren-Einfuhr		
Statistische Monatschrift. Nov. and Dec., 1889 ; Jan. and Feb., 1890.....		
<i>Hungary—</i>		
Magyarország Aruforgalma Ausztriával es mas Orszagokkal. (Monthly Trade Returns.) Aug.—Nov., 1889	The Royal Hungarian Statistical Bureau	
Mittheilungen des kön. ung. Handelsministeriums. Hefte 11—12. 1889	The Ministry of Commerce	
<i>Statistisches Jahrbuch für Ungarn—</i>		
1887. Heft 7. Das Communicationswesen im 1887	The Royal Hungarian Statistical Bureau	
1888. Heft 4. Bergbau- und Hüttenwesen im Jahre 1888. Heft 11. Kriegsmacht, 1888.....		
PRAGUE. Bulletin hebdomadaire de la Ville de Prague et des Communes-faubourgs. (Current numbers) }	The Statistical Bureau of Prague	
Belgium—		
Annales des Travaux Publics de Belgique. Tome xlvii. Cahiers 1—3, plates, 1890. (Contains “Statistique des mines, minières, carrières, usines métallurgiques, et appareils à vapeur pour 1888 ”)	The Administration of Mines	
Statistique médicale de l’Armée Belge. Année 1888. La. 8vo.....	The Belgian Minister for Foreign Affairs	
Annuaire Statistique de la Belgique. XX ^e année, 1889	The Bureau of General Statistics, Ministry of the Interior	
Commission du Travail, instituée par Arrêté Royal du 15 Avril, 1886—		
Vol. i. Réponses au questionnaire concernant le Travail Industriel		
Vol. ii. Procès-Verbaux des Séances d’Enquête concernant le Travail Industriel		
Vol. iii. Rapports. Propositions des Sections et conclusions		
Vol. iv. Comptes Rendus des Séances Plénières. Mémoires, Rapports, Lettres, &c., envisageant la question ouvrière dans son ensemble. 4 vols., diagram, fol., 1887-88.....		
Tableau général du Commerce de la Belgique avec les Pays Étrangers pendant l’année 1888. Diagrams	Dr. E. Janssens	
Tableau du Mouvement Commercial avec les Pays Étrangers. Nov. and Dec., 1889 ; Jan., 1890.....		
BRUSSELS. Bulletin hebdomadaire de Statistique Démographique et Médicale. (Current numbers)....	The Burgomaster	
HASSELT. Exposé de la Situation administrative de la Ville. Exercice 1888-89. 8vo.		
Brazil. Le Brésil, par E. Levasseur et autres. . . (Extrait de la Grande Encyclopédie.) 2 ^e édition. Illustrée de gravures, cartes, et graphiques, accompagnée d’un Appendice et d’un Album de Vues du Brésil. 2 vols., fol. Paris, 1889.....		The Commissary General of Brazil, at the Paris Exhibition of 1889

Donations—Contd.

Donations.	By whom Presented.
(a) Foreign Countries—Contd.	
Bulgaria—	
Mouvement de la Population de la Principauté de Bulgarie pendant les années 1882-84. 3 vols., 8vo. and 4to.	The Statistical Bu- reau
Statistique du Commerce de la Principauté de Bulgarie avec les Pays Etrangers pendant 1888. 4to.....	
Chile. Estadística Comercial de la Republica de Chile correspondiente al año de 1888. 8vo.	The Department of Commercial Statis- tics
China—	
<i>Imperial Maritime Customs—</i>	
I. Statistical Series—	
Customs Gazette. Nos. 32—40, 83. 1876-89	Sir Robert Hart, G.C.M.G., Peking
[Annual] Returns of Trade for 1871, 1872, 1876, and 1877	
[Annual] Reports on Trade for 1871-74	
II. Special Series—	
Medical Reports for the half-year ended 30th Sept., 1887. 34th issue	Sir Robert Hart, G.C.M.G., Peking
Opium. Map. 1881.....	
III. Miscellaneous Series—	
List of Chinese Lighthouses, &c., for 1890.....	
Denmark—	
<i>Statistique du Danemark. 4^e Série—</i>	
Lettre C. No. 6. Bétail du Danemark, 1888	The Statistical Bu- reau
Lettre D. No. 14. Importation et exportation, production d'eau-de-vie et de sucre de betteraves en 1888	
Egypt. Bulletin de l'Institut Égyptien. 2 ^e Série, No. 9. Année 1888. Plates, 8vo.	The Institute
France—	
Album de Statistique Graphique. 88 maps and 15 diagrams. obl. fol. 1889	The Bureau of Gene- ral Statistics, Min- istry of Commerce
Annuaire Statistique de la France. XII ^e année, 1889 Statistique Générale de la France. Tomes xvi et xvii. Statistique Annuelle. Années 1886 et 1887. La 8vo.	
Ministère de l'Agriculture. Bulletin. VIII ^e année. Nos. 6—8. 1889. 8vo.	The Ministry of Agriculture
Ministère des Finances. Bulletin de Statistique et de Législation comparée. Dec., 1889; Jan.—March, 1890	
Ministère des Travaux Publics. Bulletin de Statistique et Législation comparée. Oct., 1885; Feb., 1886	The Ministry of Finance
	J. H. B. De Jouy, Esq.
L'Economiste Français. (Current weekly numbers)	The Editor
Le Rentier. Journal Financier Politique. (Current numbers)	"
Revue des Banques. Jan., 1890	"
<i>Polybiblion. Revue Bibliographique Universelle—</i>	
Partie Littéraire. Dec., 1889, Jan.—March, 1890 " Technique. " "	"

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France—Contd.	
Revue Géographique Internationale. Nov.—Dec., 1889	The Editor
Revue d'Economie Politique. IV ^e année. No. 1, 1890. (Contents.) Problèmes agraires en Angleterre et en Allemagne: <i>A. de Miaskowski</i> . A propos de la Théorie du Prix: <i>A. Beaujon</i> . Étude sur les Rapports existant entre les Prix en gros et en détail: <i>E. Schwiedland</i> . Qu'est ce que le Capital?: <i>A. Villey</i>	
Annales de l'École Libre des Sciences Politiques. V ^e année. No. 1, 1890. (Contents.) L'œuvre financière de M. de Villèle: <i>M. Chotard</i> . La question des pensions civiles en France: <i>F. de Colonjon</i> . Le code spécial de l'Indigénat en Algérie: <i>H. De Pensa</i> . Les institutions prussiennes: <i>A. Lebon</i> . Les préliminaires de la séance royale du 23 Juin, 1789: <i>C. De Loménie</i>	The Publisher
<i>Journal de la Société de Statistique de Paris</i> —	The Institution
Janvier. L'Album de Statistique graphique du Ministère des Travaux Publics: <i>E. Cheysson</i> . Liste des membres de la Société	
Fevrier. La Fiscalité alimentaire et gastronomique à Paris: <i>G. Bienaymé</i> . La Statistique des dépenses publiques d'assistance en France: <i>J. de Crisenoy</i>	The Society
Mars. De la Nationalité au point de vue du dénombrement de la population dans chaque pays et de la loi française sur la nationalité: <i>T. Ducrocq</i> . L'Emigration à Marseille pendant 1889. Ce que la France a gagné à l'Exposition de 1889: <i>A. Neymarck</i>	
Germany—	
Monatshefte zur Statistik des Deutschen Reichs. Nov. and Dec., 1889; Jan. and Feb., 1890	The Imperial Statistical Bureau
Statistik des Deutschen Reichs. Neue Folge. Band xliii. Der Verkehr auf den deutschen Wasserstrassen im Jahre 1888	
PRUSSIA. <i>Preussische Statistik</i> —	
xc. Die Heilanstalten im Preussischen Staate während der Jahre 1880 bis 1885	The Royal Statistical Bureau of Prussia
xcix. Die Sterblichkeit nach Todesursachen und Altersklassen der Gestorbenen sowie die Selbstmorde und Verunglückungen, 1887	
c. Die Irrenanstalten im Preussischen Staate während der Jahre 1880 bis 1885	
cii. Statistik der Preussischen Landesuniversitäten für 1886-87	
cvii. Die Geburten, Eheschliessungen und Sterbefälle im Preussischen Staate während 1888	
Berlin—	
Statistisches Jahrbuch der Stadt Berlin. Vierzehnter Jahrgang. Statistik der Jahre 1886 und 1887	The Statistical Bureau of Berlin
Eheschliessungen, Geburten, Sterbefälle und Witterung. (Current weekly numbers)	

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Germany—Contd.	
FRANKFORT. Jahresbericht ueber die Verwaltung des Medicinalwesens die Kranken-Anstalten und die oeffentlichen Gesundheitsverhaeltnisse der Stadt Frankfurt a. M. Jahrgang 1888	The Statistical Bureau
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Annali di Agricoltura, 1889—	
163. Il Forno rurale cooperativo.....	The Director-General of Agriculture
167. Atti della Commissione Consultiva per la Fillossera. Map.....	
173. L'Innesto della Vite.....	
Coltivazioni sperimentali promosse dal Ministero di Agricoltura, Industria e Commercio nell' ultimo Decennio. . . . Vol. i, 8vo. 1889	
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Statistica Industriale. Fasc. 19. Industria della Macinazione dei Cereali. Fasc. 20. Provincia di Parma. 1889	The Director-General, Statistical Department of the State
Saggio di Bibliografia Statistica Italiana. Terza Edizione Accresciuta. 1890	
Bilanci comunali per l' anno 1887	
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Bollettino di Notizie sul Credito e la Previdenza. Nos. 10—12. 1889. No. 1. 1890	
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Della Leva sui giovani nati nell' anno 1868 e delle Vicende del R. Esercito, 1888-89. 4to.	
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Statistica delle Tasse e Diritti Comunali. Parte 1. Somme accertate in ciascun comune secondo i Conti consuntivi dell' anno 1887	
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Netherlands. Statistiek der Geborten en der Sterfte, naar den Leeftijd ende Oorzaken van den Dood in Nederland. July—Sept., 1889.....	

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Russia—	
Commerce extérieur de la Russie par la frontière d'Europe. Sept.—Nov., 1889	The Statistical Bureau, Customs Department
Résultats généraux de la Récolte en Russie, 1889. Maps, 8vo.	The Central Statistical Committee
Statistique des Incendies en Russie, 1883-87 et 1860-87. 8vo.	
Journal of the Ministry of Finance. (Current weekly numbers.) (In Russian.) 1889	His Excellency A. Vesselovsky
Rapport du Ministre des Finances sur le Budget de l'Empire pour l'Exercice 1890. Budget de l'Empire pour l'Exercice 1890. 4to.	
Règlement définitif du Budget de l'Empire pour l'Exercice 1888. Rapport présenté au Conseil de l'Empire par S. Exc. M. le Contrôleur de l'Empire.	
Spain—	
Estadística General del Comercio de Cabotaje entre los Puertos de la Peninsula é Islas Baleares en 1888	The Director-General of Customs
Memorias Comerciales y Suplemento. Nos. 168—174. 1889-90	
Sociedad Geográfica de Madrid. Boletín. Tomo xxvii. Nos. 4—6, 1889	The Society
Sweden and Norway—	
SWEDEN. <i>Bidrag till Sveriges Officiella Statistik.</i> 1889—	
G. Fångvården. Fångvårds-Styrelsens underdaniga Berattelse, 1888. (Prisons)	The Central Statistical Bureau, Stockholm
L. Statens Jernvägstrafik. Kongl. Jernvägs-Styrelsens underdaniga Berattelse, 1888. (State Railways.) Diagrams	
M. Postverket. Generalpoststyrelsens Berattelse om Postverkets Förvaltning, 1888. (Postal)	
N. Jordbruk och boskapsskötsel. Sammandrag, 1889. (Agriculture)	
P. Undervisningsväsendet. Berattelse om Folk-skolorna, 1884; Statens allmänna Läroverk för gossar 1884-85. (Education)	
Q. Skogsväsendet. Domän - Styrelsens, 1888. (Forests, &c.)	
S. Allmänna Arbeten. Väg-och Vattenbyggnadsstyrelsens, 1888. (Public Works)	
V. Brännvins tillverkning och Försäljning samt Hvitbetssocker-tillverkningen, 1886-88. (Distilleries, Beet Sugar)	
NORWAY. <i>Norges Officielle Statistik, 3^e Række.</i> 1889—	
90. Den norske Statstelegrafs Statistik for 1888. (Telegraphs)	The Central Statistical Bureau, Christiania
91. Tabeller vedkommende Norges Sparebanker, 1888. (Savings Banks)	

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(a) Foreign Countries—Contd.	
Sweden and Norway—Contd.	
NORWAY. <i>Norges Officielle Statistik</i> , 3 ^e Række—Contd.	
92. Beretning om Skolvæsenets Tilstand, 1886. (Education)	The Central Statistical Bureau, Christiania
93. Tabeller vedkommende Norges Handel, 1888. (Trade)	
94. Tabeller vedkommende Norges Kriminalstatistik, 1887. (Judicial Statistics)	
95. Beretning om Sundhedstilstanden og Medicinalforholdene, 1887. (Sanitary Condition)....	
96. Uddrag af Aarsberetninger fra de forenede Rigers Konsuler for 1888. Hefte 1—6. (Consular Reports).....	
97. Statistik over Norges Fabrikanlæg ved Udgangen af Aaret 1885. (Factories)	
98. Den civile Retspleie i Aaret 1887. (Justice)....	
99. Tabeller vedkommende Norges Fiskerier, 1888. (Sea Fisheries).....	
100. Tabeller vedkommende Folkemængdens Bevægelse, 1886. (Movement of Population)	
101. De offentlige Jernbaner. Beretning om de norske Jernbaners Drift, 1888-89. (Public Railways)	
102. Beretninger om Amternes økonomiske Tilstand, 1881-85. Bind 1. (Economic Condition of the Prefectures)	
Meddelelser fra det Statistiske Centralbureau. Bind vii. 1889. (Journal of the Statistical Bureau)	
Oversigt over Kongeriget Norges civile, geistlige og Judicielle Inddeling. Afsluttet 31 Oktober, 1889. (Administrative divisions of the Kingdom)	
Annuaire statistique de la Norvège. Neuvième année, 1889	
Switzerland—	
<i>Statistique de la Suisse—</i>	
76. Mouvement de la Population pendant 1888	The Federal Statistical Bureau
77. Résultats de la Visite sanitaire des Recrues en Automne, 1888.....	
Journal de Statistique Suisse. 1889. 3 et 4 Quartal-Heft. (Contains: "Table systématique des matières contenues dans les 25 volumes de 1865-89 du Journal de Statistique Suisse")	
Union Suisse du Commerce et de l'Industrie. Rapport sur le Commerce et l'Industrie de la Suisse pendant 1878-79, 1880, 1881, 1883-88. 8 vols., 4to. Zürich	The Union
Transvaal. Annual Report of the State Mining Engineer. 4to. 1889	E. G. Woodford, Esq.
United States—	
Department of Agriculture. Monthly Reports upon the Crops. Dec., 1889; Jan. and Feb., 1890.....	The Department
Census Bulletins. Nos. 1 and 2. 4to. 1889-90.....	R. P. Porter, Esq.

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(a) Foreign Countries—Contd.	
United States—Contd.	
Census. Two Reports of the Superintendent of Census to the Secretary of the Interior. 8vo. 1889	R. P. Porter, Esq.
Census Data. Report of a Commission appointed by the Hon. Superintendent of Census to test the different methods of tabulating—, 8vo. 1889	
Commerce of the United States and other Foreign Countries with Mexico, Central America, the West Indies, and South America. 1889	Herman Hollerith, Esq., Washington
Internal Commerce of the United States. Report for the fiscal year 1889. (Part 2)	
Foreign Commerce of the United States. Annual Report for the year ending 30th June, 1889	The Bureau of Statistics, Treasury Department
Quarterly Report of Imports, Exports, Immigration and Navigation of the United States, to 30th June, 1889. [No. 4, 1888-89]	
Summary Statement of Imports and Exports. Oct.—Dec., 1889; Jan., 1890.....	The Comptroller of the Currency
Comptroller of the Currency, Annual Report of the, Dec., 1889. 2 vols.	
Education, Report of the Commissioner of, for the year 1887-88.....	The Bureau of Education
Marriage and Divorce in the United States, 1867 to 1886. A Report on, including an Appendix relating to Marriage and Divorce in certain Countries in Europe, by Carroll D. Wright, Commissioner of Labor. 1889.....	
Surgeon-General of the Army, Report of the, for the year ending 30th June, 1889.....	The Commissioner
Treasury. Annual Report of the Secretary of the, on the State of the Finances for 1889	
A permanent National Bank Circulation, an Interview between the Committee on Banking and Currency, and John Jay Knox. 28 pp., 8vo. 1890	The Surgeon-General, Washington
CONNECTICUT. Monthly Bulletin of the State Board of Health. Nov.—Dec., 1889; Jan.—Feb., 1890....	
IOWA. Census of Iowa for the year 1885. Map, 8vo.....	The Secretary of the Treasury
MASSACHUSETTS. Annual Statistics of Manufactures, 1888. 8vo.	
<i>New York State—</i>	G. R. Gibson, Esq.
Bureau of Statistics of Labor. Sixth Annual Report for 1888. Parts 1. Wages and Working Hours. 2. Opinions relative to the causes of the rise or fall in Wages. 3. Strikes and Boycotts. 2 vols.	
Forty-second Annual Report of the Trustees of the State Museum of Natural History for 1888	The Board of Health
<i>Pennsylvania University Publications—</i>	
5. Prison Statistics of the United States for 1888: R. P. Falkner	G. G. Chisholm, Esq.
6. The Principles of Rational Taxation: S. N. Patten. 1890	
The Study of Politics and Business at the University. 1889	Bureau of Statistics of Labor
RHODE ISLAND. Monthly Reports of Deaths in the City of Providence for Nov.—Dec., 1889; also Summary for the year 1889	
	Charles F. Peck, Esq. Commissioner
	The New York State Library
	The University
	The City Registrar

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(a) Foreign Countries—Contd.	
United States—Contd.	
Bankers' Magazine, Oct., 1887; Dec., 1889; Jan.— March, 1890	The Editor
Bradstreet's Journal. (Current weekly numbers).....	
Commercial and Financial Chronicle. (Current weekly numbers).....	
Frank Leslie's Illustrated Newspaper. No. 1778. 1889. (Contains: "The Hollerith Method of Statistical Tabulation")	H. Hollerith, Esq.
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American Geographical Society. Bulletin. Vol. xxi. No. 4. 1889.....	The Society
American Statistical Association. Publications. New Series. No. 8. 1889. (Contents.) Finance Statistics of the American Commonwealths: <i>E. R. A. Selig- man</i> . Divorce in France: <i>B. F. Keller</i> . Relief of the Poor in Germany: <i>A. G. Warner</i>	
Astor Library. Forty-first Annual Report of the Trustees for 1889	The Secretary
Franklin Institute. Journal. Jan.—March, 1890	
Political Science Quarterly. (Columbia College)— Dec., 1889. New York's Constitutional Convention : <i>Pres. S. Low</i> . Economic Basis of Socialism : <i>G. Gunton</i> . Marriage and Divorce : <i>Rev. S. W. Dike</i> . Silver or Legal Tender Notes : <i>W. C. Ford</i> . English Legal History, II : <i>F. W. Mait- land</i> . Local Government in Prussia : <i>F. J. Goodnow</i> . Record of Political Events : <i>A. E. Palmer</i>	The Editor
March, 1890. Alexander Hamilton : <i>A. D. Morse</i> . The General Property Tax : <i>E. R. A. Seligman</i> . The Mortgage Evil : <i>J. P. Dunn, jun.</i> Well's Recent Economic Changes : <i>S. N. Patten</i> . Citizenship of the United States : <i>I. B. Richman</i> . Local Government in Prussia : <i>F. J. Goodnow</i>	
Quarterly Journal of Economics (Harvard University). Jan., 1890. (Contents.) The Rise of American Cities : <i>A. B. Hart</i> . The Prohibition of Railway Pools : <i>A. T. Hadley</i> . The Theory of Interest : <i>F. H. Giddings</i> . Notes and Memoranda. The Exposition of Social Economy at Paris : <i>E. Cum- mings</i> . Correspondence. The Economic Movement in France : <i>A. De Foville</i> . Appendix. Statistics of the Population of American Cities	
Chicago and Alton Railroad Company. Twenty- seventh Annual Report for 1889	The Publisher
Lake Shore and Michigan Southern Railway Company. Nineteenth Annual Report for 1888. Map	
Missouri, Kansas, and Texas Railway Company. Re-organisation Agreement, dated November, 1889	
New York Central and Hudson River Railroad Com- pany. Annual Report for 1889.....	G. R. Gibson, Esq., New York
Northern Pacific Railroad. Annual Report for the Year ending 30th June, 1889. Map	

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United States—<i>Contd.</i>	
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Railroad Pocket Manual for 1890. 12mo.	
Uruguay. Anuario Estadístico de la Republica Oriental del Uruguay. Año 1888. Diagrams and plates. La. 8vo. }	The General Statistical Bureau
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PERIODICAL RETURNS.

REGISTRATION OF THE UNITED KINGDOM.

No. I.—ENGLAND AND WALES.

MARRIAGES—To 30TH SEPTEMBER, 1889.

BIRTHS AND DEATHS—To 31ST DECEMBER, 1889.

A.—*Serial Table of MARRIAGES, BIRTHS, and DEATHS, returned in the Years 1889-83, and in the QUARTERS of those Years.*

Calendar YEARS, 1889-83:—Numbers.

Years	'89.	'88.	'87.	'86.	'85.	'84.	'83.
Marriages No.	—	203,821	200,518	196,071	197,745	204,301	206,384
Births..... „	885,160	879,868	886,331	903,760	894,270	906,750	890,722
Deaths „	517,936	510,971	530,758	537,276	522,750	530,828	522,997

QUARTERS of each Calendar Year, 1889-83.

(I.) MARRIAGES:—*Numbers.*

<i>Qrs. ended last day of</i>	'89.	'88.	'87.	'86.	'85.	'84.	'83.
March..... No.	40,963	40,276	38,836	39,202	39,111	41,614	44,096
June „	55,686	51,684	52,637	50,325	52,054	53,752	48,057
September „	53,771	51,603	49,746	48,565	49,476	50,336	52,239
December „	—	60,258	59,299	57,979	57,104	58,599	61,992

(II.) BIRTHS:—*Numbers.*

<i>Qrs. ended last day of</i>	'89.	'88.	'87.	'86.	'85.	'84.	'83.
March..... No.	220,936	223,766	219,162	230,330	231,955	224,689	232,156
June „	227,581	224,112	226,338	231,087	222,142	231,135	228,676
September „	219,805	214,651	222,835	224,332	218,558	225,985	214,233
December „	216,838	217,339	217,996	218,011	221,615	224,941	215,657

(III.) DEATHS:—*Numbers.*

<i>Qrs. ended last day of</i>	'89.	'88.	'87.	'86.	'85.	'84.	'83.
March..... No.	139,749	149,976	143,123	156,653	147,721	132,150	146,832
June „	124,453	124,918	128,488	125,359	132,340	127,904	133,789
September „	122,036	107,881	125,232	125,366	114,308	134,882	113,117
December „	131,698	128,196	133,915	129,898	128,381	135,892	129,259

*Annual Rates of MARRIAGES, BIRTHS, and DEATHS, per 1,000 PERSONS
LIVING in the Years 1889-83, and in the QUARTERS of those Years.*

Calendar YEARS, 1889-83:—General Ratios.

YEARS.....	'89.	Mean '79-88.	'88.	'87.	'86.	'85.	'84.	'83.
Estmtd. Popln. of England in thousands in middle of each Year....	29,016,	—	28,629,	28,247,	27,871,	27,499,	27,132,	26,777
Persons Mar- ried	—	14·7	14·2	14·2	14·1	14·4	15·0	15·4
Births	30·5	33·0	30·6	31·4	32·4	32·5	33·3	33·3
Deaths.....	17·9	19·4	17·8	18·8	19·3	19·0	19·5	19·5

QUARTERS of each Calendar Year, 1889-83.

(I.) PERSONS MARRIED:—*Ratio per 1,000.*

<i>Qrs. ended last day of</i>	'89.	Mean '79-88.	'88.	'87.	'86.	'85.	'84.	'83.
March	11·5	12·0	11·3	11·2	11·4	11·5	12·3	13·4
June.....	15·4	15·0	14·5	14·9	14·5	15·2	15·9	14·4
September	14·7	14·6	14·3	14·0	13·8	14·3	14·7	15·5
December	—	17·3	16·7	16·7	16·5	16·5	17·1	18·4

(II.) BIRTHS:—*Ratio per 1,000.*

<i>Qrs. ended last day of</i>	'89.	Mean '79-88.	'88.	'87.	'86.	'85.	'84.	'83.
March	30·9	33·9	31·4	31·5	33·5	34·2	33·2	35·2
June.....	31·5	33·8	31·4	32·1	33·3	32·4	34·2	34·3
September	30·1	32·3	29·7	31·3	31·9	31·5	33·0	31·7
December	29·6	32·0	30·1	30·6	31·0	32·0	32·9	32·0

(III.) DEATHS:—*Ratio per 1,000.*

<i>Qrs. ended last day of</i>	'89.	Mean '79-88.	'88.	'87.	'86.	'85.	'84.	'83.
March	19·5	21·8	21·0	20·5	22·8	21·8	19·5	22·2
June.....	17·2	19·0	17·5	18·2	18·0	19·3	18·9	20·0
September	16·7	17·5	15·0	17·6	17·8	16·5	19·7	16·8
December	18·0	19·2	17·8	18·8	18·5	18·5	19·9	19·2

B.—Comparative Table of CONSOLS, PROVISIONS, COAL and PAUPERISM in each QUARTER of 1887-88-89.

Quarters ending	Average Prices of							PAUPERISM.	
	2½l. per Cent. CONSOLS (for Money) per 100l. Stock.	DISCOUNT charged by the Bank of England.	WHEAT per Quarter in England and Wales.	MEAT per Pound at the Metropolitan Meat Market (by the Carcase), with the Mean Prices.		COAL (Seaborne) in the London Market per Ton.		Quarterly Average of the Number of Paupers Relieved on the Last Day of each Week.	
				Beef.	Mutton.			In-door.	Out-door.
1887	£ s. d.	£	s. d.	d. d. d.	d. d. d.	s. d.			
Mar. 31	—	4·20	34 —	2 $\frac{1}{8}$ —5 $\frac{1}{2}$	3 $\frac{1}{2}$ —7 $\frac{1}{4}$	15 2		193,957	573,627
				4 $\frac{1}{4}$	5 $\frac{3}{8}$				
June 30	—	2·23	33 9	3—5 $\frac{1}{2}$	3 $\frac{1}{2}$ —7 $\frac{1}{4}$	15 2		178,652	543,476
				4 $\frac{1}{4}$	5 $\frac{3}{8}$				
Sept. 30	—	2·95	32 1	3—5 $\frac{3}{8}$	3 $\frac{3}{8}$ —7 $\frac{1}{8}$	13 11		171,551	526,849
				4 $\frac{3}{8}$	5 $\frac{1}{4}$				
Dec. 31	—	4·00	30 2	2 $\frac{7}{8}$ —6 $\frac{1}{4}$	3 $\frac{1}{2}$ —6 $\frac{7}{8}$	15 2		189,055	539,861
				4 $\frac{1}{2}$	5				
1888									
Mar. 31	—	2·84	30 7	3—6 $\frac{1}{8}$	3 $\frac{1}{4}$ —6 $\frac{7}{8}$	15 1		199,301	581,233
				4 $\frac{3}{8}$	5 $\frac{1}{8}$				
June 30	—	2·44	31 2	3 $\frac{1}{4}$ —6 $\frac{1}{4}$	3 $\frac{3}{4}$ —7 $\frac{3}{4}$	14 6		180,641	550,628
				4 $\frac{3}{4}$	5 $\frac{3}{4}$				
Sept. 30	—	2·98	34 4	3 $\frac{5}{8}$ —6 $\frac{5}{8}$	4 $\frac{1}{8}$ —8 $\frac{1}{4}$	14 —		171,891	527,001
				5 $\frac{1}{8}$	6 $\frac{1}{4}$				
Dec. 31	—	4·96	31 4	3 $\frac{1}{4}$ —6 $\frac{1}{2}$	3 $\frac{5}{8}$ —8	16 1		187,006	531,918
				4 $\frac{7}{8}$	5 $\frac{7}{8}$				
1889									
Mar. 31	98 10 —	3·41	29 11	3 $\frac{1}{4}$ —6 $\frac{1}{8}$	3 $\frac{1}{2}$ —7 $\frac{7}{8}$	16 4		197,363	558,527
				4 $\frac{3}{4}$	5 $\frac{3}{4}$				
June 30	98 11 6	2·59	29 3	3 $\frac{1}{2}$ —7 $\frac{1}{4}$	4 $\frac{1}{8}$ —8 $\frac{7}{8}$	14 6		178,019	529,366
				5 $\frac{3}{8}$	6 $\frac{7}{8}$				
Sept. 30	97 19 2	3·20	30 —	3 $\frac{1}{2}$ —7 $\frac{3}{4}$	5 $\frac{5}{8}$ —9 $\frac{5}{8}$	15 9		170,072	512,156
				5 $\frac{3}{8}$	7 $\frac{5}{8}$				
Dec. 31	97 2 2	5·02	29 11	3 $\frac{1}{2}$ —7 $\frac{1}{2}$	6 $\frac{1}{8}$ —9 $\frac{7}{8}$	19 5		184,399	512,707
				5 $\frac{1}{2}$	8				

C.—Special Average Death-Rate Table:—ANNUAL RATE of MORTALITY per 1,000 in TOWN and COUNTRY DISTRICTS of ENGLAND in each Quarter of the Years 1889-87.

	Area in Statute Acres.	Population Estimated in the middle of 1889.	Quarters ending	Annual Rate of Mortality per 1,000 in each Quarter of the Years				
				1889.	Mean '81-88.	1888.	1887.	
TOWN DISTRICTS.								
All Registration Sub-Districts three-fourths of the population of which, as enumerated in 1881, resided within the boundaries of Urban Sanitary Districts existing in 1886	3,688,436	18,708,996	{	March ..	20·0	22·1	21·3	21·0
				June	17·7	19·3	17·7	18·8
				Sept.	17·8	18·6	15·7	19·0
				Dec.	18·9	20·1	19·0	19·9
			Year	18·6	20·0	18·4	19·7	
			Year	16·5	17·4	16·7	17·2	
COUNTRY DISTRICTS.								
All the remaining Registration Sub-Districts of England and Wales—not coming within the above definition of Town Districts	33,550,915	10,306,617	{	March ..	18·6	20·2	20·6	19·7
				June	16·3	17·8	17·2	17·2
				Sept.	14·7	15·0	13·6	15·2
				Dec.	16·4	16·9	15·6	16·9

D.—*Special Town Table:—POPULATION; BIRTH-RATE and DEATH-RATE in each Quarter of 1889, in TWENTY-EIGHT Large Towns.*

Cities and Boroughs.	Estimated Population in the Middle of the Year 1889.	Annual Rate to 1,000 Living during the Thirteen Weeks ending							
		30th March. (1st Quarter.)		29th June. (2nd Quarter.)		28th September. (3rd Quarter.)		28th December. (4th Quarter.)	
		Births.	Deaths.	Births.	Deaths.	Births.	Deaths.	Births.	Deaths.
Twenty-eight towns	9,555,406	32·4	20·9	31·5	18·2	30·1	18·6	30·0	19·4
London*	4,351,738	32·4	19·5	30·4	16·0	29·2	16·5	29·4	17·8
Brighton	121,807	25·1	15·5	24·5	14·7	24·0	14·4	24·1	15·9
Portsmouth	141,253	37·3	19·0	36·1	16·4	33·6	19·0	33·5	18·1
Norwich	94,510	35·5	21·4	35·3	17·2	31·3	18·0	33·1	16·9
Plymouth	78,225	32·6	21·7	32·1	23·8	32·3	26·6	30·6	28·7
Bristol	229,361	30·6	20·3	29·4	16·2	28·6	16·4	28·5	17·5
Wolverhampton	82,544	34·6	21·9	32·2	19·1	31·0	19·6	31·8	21·9
Birmingham	454,835	31·9	20·6	32·3	17·5	30·2	18·6	29·5	18·1
Leicester	150,520	32·9	18·0	33·5	14·9	28·9	18·6	31·6	16·2
Nottingham	237,812	29·4	18·9	29·7	16·7	27·1	16·2	25·9	16·2
Derby	98,529	29·0	18·2	28·9	16·1	27·9	14·2	28·5	16·9
Birkenhead	102,541	32·2	20·2	30·9	16·3	30·6	19·1	31·4	15·7
Liverpool	606,562	30·8	24·2	29·2	19·2	28·6	21·0	28·3	21·9
Bolton	114,670	33·1	23·2	34·2	22·6	32·7	20·2	31·4	22·1
Manchester	378,800	36·3	28·5	36·4	28·0	34·5	24·4	34·1	26·0
Salford	234,283	31·3	22·8	31·2	19·8	28·6	20·6	28·7	18·7
Oldham	142,405	29·1	24·1	30·1	21·8	27·5	16·1	26·9	19·7
Blackburn	121,275	36·4	32·3	36·1	23·9	34·0	21·5	30·7	24·2
Preston	104,194	40·6	28·0	39·4	32·6	37·5	33·0	35·1	26·5
Huddersfield	92,825	24·9	20·9	23·1	19·2	24·2	15·6	26·1	19·6
Halifax	81,080	27·8	20·8	29·1	23·3	27·5	19·3	27·7	22·8
Bradford	235,056	28·7	19·1	27·4	18·1	25·4	18·2	25·6	21·3
Leeds	357,449	32·4	22·0	34·3	22·1	32·5	21·7	32·3	22·5
Sheffield	327,227	33·3	23·1	33·4	19·4	33·1	20·5	33·2	20·5
Hull	208,017	31·7	17·1	34·0	20·4	33·0	21·4	31·7	22·1
Sunderland	134,193	35·8	20·8	37·8	19·6	35·9	25·9	34·5	25·1
Newcastle	160,983	38·0	23·6	37·5	23·7	39·0	27·6	38·3	25·8
Cardiff	112,712	40·3	23·2	38·3	18·2	37·0	20·0	39·0	16·6
Edinburgh	266,900	27·9	19·0	30·0	16·5	26·5	15·8	26·7	20·4
Glasgow	528,144	36·8	27·8	39·9	26·1	35·5	20·9	35·2	24·4
Dublin	353,082	30·3	28·7	28·9	23·7	27·0	24·0	25·9	26·6

* For the purposes of this table, London includes the Strand Union workhouse at Edmonton, the Holborn Union workhouse at Mitcham, and the Metropolitan Asylum hospitals also situated outside Registration London.

E.—Divisional Table:—MARRIAGES in the Year ending 30th September; and BIRTHS and DEATHS in the Year ending 31st December, 1889, as Registered Quarterly.

1 DIVISIONS. (England and Wales.)	2 AREA* in Statute Acres.	3 Enumerated POPULATION, 1881.	4 5 6 7 MARRIAGES in Quarters ending			
			31st December, 1888.	31st March, 1889.	30th June, 1889.	30th September, 1889.
		No.	No.	No.	No.	No.
ENGLD. & WALES....Totals	37,319,221	25,974,439	60,221	40,963	55,686	53,771
I. London	75,362	3,816,483	9,930	6,504	9,244	9,654
II. South-Eastern	3,994,431	2,487,076	5,451	3,398	4,603	4,651
III. South Midland	3,201,325	1,596,259	3,385	1,850	2,795	2,914
IV. Eastern	3,211,441	1,343,524	3,408	1,704	2,288	2,234
V. South-Western	4,981,170	1,859,198	3,751	2,789	3,402	3,078
VI. West Midland	3,945,460	3,029,319	7,000	4,265	6,392	6,006
VII. North Midland	3,535,445	1,637,865	3,469	2,237	3,713	2,933
VIII. North-Western	1,998,914	4,108,184	9,377	7,474	9,359	9,397
IX. Yorkshire	3,702,384	2,894,759	7,037	4,927	6,538	6,257
X. Northern	3,547,947	1,624,213	3,633	3,123	3,905	3,532
XI. Monmthsh. & Wales	5,125,342	1,577,559	3,780	2,692	3,447	3,115

8 DIVISIONS. (England and Wales.)	9 10 11 12 BIRTHS in each Quarter of 1889 ending				13 14 15 16 DEATHS in each Quarter of 1889 ending			
	31st March.	30th June.	30th Septem- ber.	31st Decem- ber.	31st March.	30th June.	30th Septem- ber.	31st Decem- ber.
	No.	No.	No.	No.	No.	No.	No.	No.
ENGLD. & WALES....Totals	220,936	227,581	219,805	216,838	139,749	124,453	122,036	131,698
I. London	35,082	32,946	31,622	31,827	21,089	17,307	17,860	19,293
II. South-Eastern	19,572	19,718	19,370	19,345	11,586	9,677	9,567	10,346
III. South Midland	13,331	13,832	13,437	13,176	7,741	6,538	6,422	6,973
IV. Eastern	11,762	12,390	11,628	11,569	6,609	5,740	5,397	6,180
V. South-Western	13,183	13,688	13,526	13,267	8,858	7,923	6,919	7,974
VI. West Midland	25,014	26,246	24,779	24,746	16,063	13,639	13,077	14,499
VII. North Midland	14,084	14,620	13,747	13,741	8,274	7,465	7,307	7,908
VIII. North-Western	37,275	38,417	37,565	36,708	26,284	24,368	23,757	24,619
IX. Yorkshire	23,959	25,620	24,672	24,431	15,683	15,153	15,294	16,736
X. Northern	14,863	15,994	15,778	14,960	8,866	8,549	9,485	9,046
XI. Monmthsh. & Wales	12,811	14,110	13,681	13,068	8,696	8,094	6,951	8,124

* These are revised figures, and will be found to differ somewhat from those first published.

F.—General Meteorological Table,

[Abstracted from the particulars supplied to the

1889. Months.	Temperature of										Elastic Force of Vapour.		Weight of Vapour in a Cubic Foot of Air.	
	Air.			Evaporation.		Dew Point.		Air—Daily Range.		Water of the Thames	Mean.	Diff. from Average of 48 Years.	Mean.	Diff. from Average of 48 Years.
	Mean.	Diff. from Average of 118 Years.	Diff. from Average of 48 Years.	Mean.	Diff. from Average of 48 Years.	Mean.	Diff. from Average of 48 Years.	Mean.	Diff. from Average of 48 Years.					
Jan.....	37.1	+0.5	-1.3	36.1	-0.8	34.6	-0.2	9.3	-0.2	...	.200	.000	2.3	- 1
Feb.....	37.0	-1.9	-2.4	34.9	-2.9	32.1	-3.1	11.3	+0.3	...	.182	-.026	2.1	- 3
Mar. ...	40.6	-0.5	-0.9	38.0	-1.1	34.6	-1.2	15.3	+0.7	...	.200	-.014	2.4	- 1
Means...	38.2	-0.6	-1.5	36.3	-1.6	33.8	-1.5	12.0	+0.3	...	.194	-.013	2.3	- 2
April ...	45.7	-0.4	-1.2	43.3	-0.5	40.6	+0.2	15.8	-2.6	...	.253	+0.002	2.9	0
May.....	56.5	+4.0	+4.0	53.2	+4.4	50.2	+5.3	19.3	-1.2	...	.364	+0.067	4.1	+ 7
June ...	61.4	+3.2	+2.5	57.2	+2.7	53.5	+2.8	21.2	+0.3	...	.410	+0.040	4.5	+ 3
Means...	54.5	+2.3	+1.8	51.2	+2.2	48.1	+2.8	18.8	-1.2	...	.342	+0.036	3.8	+ 3
July.....	61.0	-0.6	-1.2	56.9	-0.8	53.3	-0.7	18.2	-2.8	...	.408	-.009	4.6	- 2
Aug. ...	60.0	-0.9	-1.4	56.4	-1.0	53.3	-0.7	19.7	-0.2	...	.406	-.011	4.5	- 3
Sept. ...	55.8	-0.8	-1.2	52.5	-1.4	49.4	-1.7	17.3	-0.9	...	.331	-.048	3.8	- 5
Means...	58.9	-0.8	-1.3	55.3	-1.1	52.0	-1.0	18.4	-1.3	...	.382	-.025	4.3	- 3
Oct.....	48.6	-0.9	-1.2	47.1	-0.7	45.5	-0.3	14.2	-0.3	...	.305	-.003	3.4	-0.5
Nov. ...	44.3	+1.9	+0.8	43.0	+1.6	41.2	+1.7	10.9	-0.4	...	.259	+0.013	2.9	-0.1
Dec. ...	37.6	-1.5	-2.2	36.5	-1.9	35.2	-1.3	9.2	-0.1	...	.205	-.013	2.4	-0.3
Means...	43.5	-0.2	-1.2	42.2	-0.3	40.6	0.0	11.4	-0.3	...	.256	-.001	2.9	-0.3

Note.—In reading this table it will be borne in mind that the sign (—) minus signifies

About London the mean daily temperature of the air was generally below its average from 1st October till 2nd November, the mean daily deficiency for these thirty-three days being $2^{\circ}5$; from 3rd November to the 25th it was generally above, the mean daily excess being $2^{\circ}9$; from 26th November to 15th December it was below, with the exception of two days, viz., the 9th and 10th December, when it was $1^{\circ}9$ and $3^{\circ}4$ above; it was particularly below on the 27th and 28th November, from the 1st to the 5th December, and on the 12th December, it being more than 10° below on all these days, the mean daily deficiency for the twenty days being $7^{\circ}4$; from 16th December to the 24th it was above, the mean daily excess being $4^{\circ}6$; and from the 25th to the end of the year it was below, particularly so on the 29th, when it was 13° below its average, the mean daily deficiency for the seven days being $6^{\circ}2$.

The mean temperature of the air for December was $37^{\circ}6$, being $1^{\circ}5$ and $2^{\circ}2$

for the Year ended 31st December, 1889.

Registrar-General by JAMES GLAISHER, ESQ., F.R.S., &c.]

Degree of Humidity.		Reading of Barometer.		Weight of a Cubic Foot of Air.		Rain.		Daily Horizontal Movement of the Air.	Reading of Thermometer on Grass.					1889. Months.
Mean.	Diff. from Average of 48 Years.	Mean.	Diff. from Average of 48 Years.	Mean.	Diff. from Average of 48 Years.	Amnt.	Diff. from Average of 74 Years.		Number of Nights it was			Lowest Reading at Night.	Highest Reading at Night.	
									At or below 30°.	Between 30° and 40°.	Above 40°.			
91	+ 4	In. 29·990	+·234	Grs. 559	+ 5	In. 0·84	-1·04	Miles. 212	10	21	0	21·2	39·2	January
83	0	29·718	-·078	555	+ 2	2·20	+0·64	386	22	5	1	15·6	42·0	Feb.
79	- 2	29·804	+·055	552	+ 2	1·32	-0·22	392	21	8	2	12·3	42·3	March
84	+ 1	29·837	+·070	555	+ 3	Sum 4·36	Sum -0·62	Mean 330	Sum 53	Sum 34	Sum 3	Lowest 12·3	Highest 42·3	Means
83	+ 3	29·559	-·188	542	- 1	1·85	+0·31	254	8	20	2	24·7	41·5	April
80	+10	29·662	-·129	531	- 9	3·30	+1·24	204	0	6	24	33·1	53·0	May
76	+ 1	29·854	+·044	530	- 2	2·07	+0·09	217	0	0	30	41·1	56·4	June
80	+ 5	29·692	-·091	534	- 4	Sum 7·22	Sum +1·64	Mean 225	Sum 8	Sum 26	Sum 56	Lowest 24·7	Highest 56·4	Means
77	+ 2	29·759	-·036	529	+ 1	2·07	-0·48	219	0	1	30	38·6	57·9	July
78	+ 2	29·710	-·076	529	0	1·81	-0·56	278	0	2	29	37·1	56·6	August
74	- 7	29·865	+·061	536	+ 3	1·68	-0·72	219	4	9	17	26·1	51·6	Sept.
76	- 1	29·778	-·016	531	+ 1	Sum 5·56	Sum -1·76	Mean 239	Sum 4	Sum 12	Sum 76	Lowest 26·1	Highest 57·9	Means
89	0	29·521	-·197	538	- 2	3·93	+1·19	239	2	27	2	28·0	50·0	October
89	- 1	30·043	+·308	552	+ 4	0·78	-1·60	212	12	15	3	19·9	47·0	Nov.
91	+ 1	30·010	+·223	559	+ 7	1·44	-0·54	209	20	8	3	14·6	45·2	Dec.
90	0	29·858	+·111	550	+ 3	Sum 6·15	Sum -0·95	Mean 220	Sum 34	Sum 50	Sum 8	Lowest 14·6	Highest 50·0	Means

below the average, and that the sign (+) plus signifies above the average.

below the average of one hundred and eighteen and forty-eight years respectively; it was 3°·2 and 0°·5 lower than in 1888 and 1887 respectively; and 1°·1 higher than in 1886.

The mean high day temperature of the air for December was 41°·7, being 2°·8 below the average of forty-eight years; it was 3°·9 and 0°·4 lower than in 1888 and 1887 respectively; and 0°·3 higher than in 1886, and there were only ten instances of as low or lower temperature back to the year 1841, viz.:—1886 it was 41°·4; 1879 it was 37°·4; 1878 it was 37°·4; 1874 it was 37°·9; 1870 it was 38°·0; 1860 it was 40°·6; 1859 it was 41°·5; 1853 it was 38°·8; 1846 it was 37°·2; 1844 it was 36°·8.

The mean low night temperature of the air for December was 32°·5, being 2°·6 below the average of forty-eight years; it was 3°·1 and 0°·9 lower than in 1888 and 1887 respectively, and 1°·3 higher than in 1886.

No. II.—SCOTLAND.

BIRTHS, DEATHS, AND MARRIAGES, IN THE YEAR

ENDED 31ST DECEMBER, 1889.

I.—*Serial Table :—Number of BIRTHS, DEATHS, and MARRIAGES in Scotland, and their Proportion to the Population estimated to the Middle of each Year, during each Quarter of the Years 1889-£5 inclusive.*

	1889.		1888.		1887.		1886.		1885.	
	Number.	Per Cent.	Number.	Per Cent.	Number.	Per Cent.	Number.	Per Cent.	Number.	Per Cent.
<i>1st Quarter—</i>										
Births	29,830	2·97	30,481	3·04	30,589	3·11	31,880	3·27	30,878	3·20
Deaths	19,609	1·95	20,824	2·08	20,036	2·04	20,516	2·11	21,936	2·27
Marriages ..	6,318	0·63	5,942	0·59	6,249	0·63	6,229	0·64	6,408	0·66
Mean Tem- perature }	38°·6		36°·5		38°·6		35°·3		37°·7	
<i>2nd Quarter—</i>										
Births	32,294	3·18	32,088	3·20	32,698	3·29	33,381	3·39	32,404	3·33
Deaths	18,213	1·79	18,048	1·80	18,685	1·88	18,555	1·88	18,793	1·93
Marriages ..	6,546	0·64	6,318	0·63	6,083	0·61	6,091	0·62	6,363	0·65
Mean Tem- perature }	51°·0		47°·5		49°·6		47°·7		47°·6	
<i>3rd Quarter—</i>										
Births	30,277	2·95	30,037	2·96	30,602	3·04	31,603	3·17	31,274	3·17
Deaths	16,787	1·63	14,919	1·47	16,885	1·68	16,263	1·63	15,981	1·62
Marriages ..	6,257	0·61	5,892	0·58	5,643	0·56	5,612	0·56	5,679	0·58
Mean Tem- perature }	54°·6		53°·3		55°·7		54°·9		54°·0	
<i>4th Quarter—</i>										
Births	30,369	2·96	30,627	3·02	30,486	3·03	31,063	3·12	31,554	3·20
Deaths	18,594	1·81	17,371	1·71	18,894	1·88	18,288	1·84	17,893	1·82
Marriages ..	7,197	0·70	7,129	0·70	6,876	0·68	6,537	0·66	6,806	0·69
Mean Tem- perature }	42°·6		43°·4		39°·9		41°·8		40°·3	
<i>Year—</i>										
Population.	4,077,070		4,034,156		3,991,499		3,949,393		3,907,736	
Births	122,770	3·01	123,233	3·05	124,375	3·12	127,927	3·24	126,110	3·23
Deaths	73,203	1·80	71,162	1·76	74,500	1·87	73,622	1·86	74,603	1·91
Marriages ..	26,318	0·65	25,281	0·63	24,851	0·62	24,169	0·62	25,256	0·65

I.—*Special Average Table:—Number of Births, Deaths, and Marriages in Scotland and in the Town and Country Districts for each Quarter of the Year ending 31st December, 1889, and their Proportion to the Population; also the Number of Illegitimate Births, and their Proportion to the Total Births.*

Registration Groups of Districts.	Total Births.			Illegitimate Births.			Deaths.			Marriages.		
	Number.	Per Cent.	Ratio. One in every	Number.	Per Cent.	Ratio. One in every	Number.	Per Cent.	Ratio. One in every	Number.	Per Cent.	Ratio. One in every
<i>1st Quarter—</i> SCOTLAND	29,830	2'97	34	2,391	8'0	12'5	19,609	1'95	51	6,318	0'63	159
Principal towns	12,320	3'10	32	932	7'6	13'2	8,492	2'13	47	3,093	0'78	129
Large „	3,738	3'30	30	242	6'5	15'4	2,202	1'95	51	803	0'71	141
Small „	6,307	2'97	34	479	7'6	13'2	3,932	1'85	54	1,243	0'58	171
Mainland rural	6,739	2'70	37	696	10'3	9'7	4,423	1'77	57	992	0'40	250
Insular „	726	2'28	44	42	5'8	17'1	560	1'76	57	187	0'59	170
<i>2nd Quarter—</i> SCOTLAND	32,294	3'18	31	2,470	7'6	13'1	18,213	1'79	56	6,546	0'64	156
Principal towns	13,705	3'40	29	991	7'2	13'8	8,296	2'06	49	3,184	0'79	126
Large „	3,932	3'43	29	267	6'8	14'7	2,073	1'81	55	744	0'65	154
Small „	6,798	3'16	32	470	6'9	14'5	3,568	1'66	60	1,246	0'58	172
Mainland rural	7,200	2'85	35	701	9'7	10'3	3,825	1'52	66	1,304	0'52	193
Insular „	659	2'05	49	41	6'2	16'1	451	1'40	71	68	0'21	473
<i>3rd Quarter—</i> SCOTLAND	30,277	2'95	34	2,381	7'9	12'7	16,787	1'63	61	6,257	0'61	164
Principal towns	12,335	3'03	33	918	7'4	13'5	7,260	1'78	56	3,346	0'82	122
Large „	3,705	3'20	31	237	6'4	15'6	1,937	1'68	60	812	0'70	143
Small „	6,511	2'99	33	511	7'8	12'8	3,482	1'60	62	1,115	0'51	195
Mainland rural	6,983	2'74	37	674	9'7	10'4	3,707	1'45	69	936	0'37	273
Insular „	743	2'28	44	41	5'5	18'1	401	1'23	81	48	0'15	678
<i>4th Quarter—</i> SCOTLAND	30,369	2'96	34	2,401	7'9	12'6	18,594	1'81	55	7,197	0'70	143
Principal towns	12,669	3'11	32	945	7'5	13'4	8,384	2'06	49	3,281	0'81	124
Large „	3,604	3'12	32	221	6'1	16'3	2,252	1'95	51	843	0'73	137
Small „	6,383	2'94	34	478	7'5	13'4	3,642	1'68	60	1,414	0'65	154
Mainland rural	6,854	2'69	37	702	10'2	9'8	3,887	1'52	66	1,517	0'59	168
Insular „	859	2'64	38	55	6'4	15'6	429	1'32	76	142	0'44	229

Population of Scotland.

Population.	Scotland.	Principal Towns.	Large Towns.	Small Towns.	Mainland Rural.	Insular Rural.
By Census of 1881	3,735,573	1,409,260	404,302	784,654	1,006,969	130,388
Estimated to the middle of 1889	4,077,070	1,614,646	458,761	862,535	1,012,040	129,088

III.—*Bastardy Table:—Proportion of ILLEGITIMATE in every Hundred BIRTHS in the Divisions and Counties of SCOTLAND, during each quarter of the Year ending 31st December, 1889; with the Corresponding Figures for 1888 added for Comparison.*

Divisions and Counties.	Per Cent. for the Quarters ending 1889.				Per Cent. for the Quarters ending 1888.			
	31st March.	30th June.	30th Sept.	31st Dec.	31st March.	30th June.	30th Sept.	31st Dec.
SCOTLAND	8.0	7.6	7.9	7.9	8.5	7.7	8.2	7.9
<i>Divisions—</i>								
Northern	6.3	7.5	7.2	6.7	9.2	8.9	6.6	6.6
North-Western.....	7.2	6.9	6.3	5.9	6.8	7.8	7.1	6.8
North-Eastern	13.8	13.1	13.0	12.5	15.5	13.1	12.8	14.1
East Midland	7.9	9.0	8.1	8.1	9.1	8.4	8.3	8.0
West Midland	6.8	5.7	6.7	7.1	6.0	5.9	6.6	5.7
South-Western.....	6.5	5.9	6.3	6.5	6.9	6.1	6.7	6.4
South-Eastern	7.7	7.4	7.5	7.6	7.4	7.1	8.5	8.2
Southern	13.9	12.8	14.2	14.3	14.5	12.6	14.0	11.8
<i>Counties—</i>								
Shetland	1.5	7.7	4.9	3.5	2.6	4.7	3.6	2.6
Orkney	7.8	4.0	7.6	6.6	5.4	8.3	5.1	3.9
Caithness.....	8.3	9.8	9.4	9.6	15.1	12.2	9.9	13.4
Sutherland	5.4	6.9	5.5	5.9	10.4	8.8	6.2	2.7
Ross and Cromarty	4.9	6.5	5.1	3.7	5.1	5.4	5.4	5.6
Inverness	9.1	7.2	7.5	8.1	8.5	9.6	8.6	8.0
Nairn	21.2	14.3	10.0	8.2	9.4	11.1	3.6	23.6
Elgin	18.0	12.5	13.5	14.5	18.8	12.6	13.0	18.2
Banff	16.5	14.3	9.1	11.5	17.9	14.5	12.7	15.7
Aberdeen.....	12.6	12.9	13.9	12.8	14.6	12.7	13.2	13.1
Kincardine	12.4	12.9	11.8	10.5	15.7	15.1	11.9	12.3
Forfar	9.0	10.5	9.2	9.7	10.9	10.3	9.4	9.7
Perth	8.7	10.5	9.7	8.3	10.0	9.4	10.9	7.9
Fife	6.0	6.3	5.7	5.6	5.9	5.5	5.2	5.9
Kinross	10.8	1.8	11.1	7.1	25.0	10.0	13.0	7.1
Clackmannan	4.5	7.1	6.7	8.2	6.5	10.3	8.7	4.9
Stirling	7.8	5.6	6.9	8.0	5.7	6.5	6.8	5.4
Dumbarton.....	9.3	4.9	5.4	5.4	5.4	4.6	5.0	4.6
Argyll	7.8	6.7	8.6	8.5	7.4	6.7	9.6	8.2
Bute	9.1	6.6	5.6	2.8	5.9	6.5	2.7	3.8
Renfrew	5.7	4.5	5.6	5.8	5.4	4.5	5.4	5.7
Ayr	7.4	6.1	6.5	7.6	8.0	7.0	7.8	7.1
Lanark	6.5	6.1	6.4	6.4	6.9	6.2	6.8	6.5
Linlithgow	9.4	6.5	7.1	6.0	4.6	5.5	5.6	6.5
Edinburgh	7.4	7.1	7.4	7.4	7.6	7.2	8.5	8.2
Haddington	7.6	6.4	7.0	8.3	5.6	8.0	9.3	8.9
Berwick	9.1	11.5	8.6	13.8	10.1	8.2	13.4	8.9
Peebles	6.4	9.7	10.1	9.8	9.1	8.8	10.6	8.3
Selkirk	8.3	10.4	7.9	8.3	9.7	7.1	8.4	12.2
Roxburgh	7.9	11.2	11.1	11.3	11.4	9.5	9.6	11.0
Dumfries.....	16.2	11.4	12.6	13.0	15.2	15.1	14.9	12.2
Kirkeudbright	13.7	14.1	16.2	16.2	16.4	11.3	15.2	8.7
Wigtown.....	17.3	16.1	19.2	18.4	15.9	12.2	17.5	15.4

IV.—*Divisional Table:—MARRIAGES, BIRTHS, and DEATHS Registered in the Year ended 31st December, 1889.*

(Compiled from the Registrar-General's Quarterly Returns.)

1	2	3	4	5	6
DIVISIONS. (Scotland)	AREA in Statute Acres.	POPULATION, 1881. (Persons.)	Marriages.	Births.	Deaths.
		No.	No.	No.	No.
SCOTLAND Totals	19,639,377	3,735,573	26,318	122,770	73,203
I. Northern	2,261,622	123,984	471	2,764	1,770
II. North-Western	4,739,876	165,856	687	4,006	2,495
III. North-Eastern	2,429,594	418,250	2,485	13,052	7,089
IV. East Midland	2,790,492	602,421	3,783	17,595	10,810
V. West Midland	2,693,176	283,460	1,720	9,104	5,476
VI. South-Western	1,462,397	1,385,447	11,853	52,525	31,290
VII. South-Eastern	1,192,524	546,658	4,254	18,269	10,636
VIII. Southern	2,069,696	209,497	1,065	5,455	3,637

No. III.—GREAT BRITAIN AND IRELAND.

SUMMARY of MARRIAGES, in the Year ended 30th September, 1889; and of BIRTHS and DEATHS, in the Year ended 31st December, 1889.

(Compiled from the Quarterly Returns of the respective Registrars-General.)

COUNTRIES.	[000's omitted.]		Marriages.	Per 1,000 of Popu- lation.	Births.	Per 1,000 of Popu- lation.	Deaths.	Per 1,000 of Popu- lation.
	Area in Statute Acres.	Popu- lation, 1881. (Persons.)						
		No.	No.	Ratio.	No.	Ratio.	No.	Ratio.
England and Wales	37,319,	25,974,	210,678	8·1	885,160	34·1	517,936	19·9
Scotland	19,639,	3,736,	26,250	7·0	122,770	32·9	73,203	19·6
Ireland	20,323,	5,175,	21,013	4·1	107,782	20·8	82,986	16·0
GREAT BRITAIN AND IRELAND }	77,281,	34,885,	257,941	7·4	1,115,712	32·0	674,125	19·3

Note.—The numbers against Ireland represent the marriages, births, and deaths that the local registrars have succeeded in recording; but how far the registration approximates to absolute completeness, does not at present appear to be known. It will be seen that the Irish ratios of marriages, births, and deaths are much under those of England and Scotland.—ED. S. J.

Trade of United Kingdom, for the Years 1888-84.—Declared Value of the Total Exports of Foreign and Colonial Produce and Manufactures to each Foreign Country and British Possession.

Merchandise Exported to the following Foreign Countries, &c.	[000's omitted.]				
	1888.	1887.	1886.	1885.	1884.
I.—FOREIGN COUNTRIES.					
Northern Europe; viz., Russia, Sweden, Norway, Denmark, & Iceland, & Heligoland	£ 4,849,	£ 4,507,	£ 3,592,	£ 4,001,	£ 4,451,
Central Europe; viz., Germany, Holland and Belgium	24,177,	24,640,	22,566,	23,685,	26,332,
Western Europe; viz., France, Portugal (with Azores, Madeira, &c.), and Spain (with Gibraltar and Canaries)	10,508,	8,034,	7,914,	9,266,	11,027,
Southern Europe; viz., Italy, Austrian Empire, Greece, Ionian Islands, and Malta	1,461,	1,341,	1,560,	1,423,	1,829,
Levant; viz., Turkey, Roumania, Syria and Palestine, and Egypt	619,	706,	868,	978,	950,
Northern Africa; viz., Tripoli, Tunis, Algeria, and Morocco	124,	118,	119,	141,	92,
Western Africa	168,	145,	166,	215,	219,
Eastern Africa; with African Ports on Red Sea, Aden, Arabia, Persia, Bourbon, and Kooria Moorla Islands	—	—	—	—	—
Indian Seas, Siam, Sumatra, Java, Philippines; other Islands	72,	48,	62,	46,	72,
South Sea Islands	—	—	—	—	—
China, including Hong Kong and Japan	463,	869,	566,	855,	970,
United States of America	12,314,	10,692,	10,783,	9,101,	8,312,
Mexico and Central America	163,	123,	126,	93,	96,
Foreign West Indies and Hayti	881,	741,	886,	774,	792,
South America (Northern), New Granada, Venezuela and Ecuador	78,	81,	69,	56,	75,
„ (Pacific), Peru, Bolivia, Chili, and Patagonia	378,	283,	253,	264,	289,
„ (Atlantic), Brazil, Uruguay, and Argentine Confed.	561,	458,	489,	401,	489,
Other countries (unenumerated)	132,	120,	121,	112,	124,
<i>Total—Foreign Countries</i>	56,948,	52,906,	50,140,	51,411,	56,119,
II.—BRITISH POSSESSIONS.					
British India, Ceylon, and Singapore	1,485,	1,653,	1,371,	1,802,	1,706,
Austral. Cols.—New South Wales and Victoria, So. Aus., W. Aus., Tasm., and N. Zealand	3,186,	2,526,	2,622,	2,937,	2,909,
British North America	1,135,	1,112,	1,152,	1,168,	1,034,
„ W. Indies with Btsh. Guiana & Honduras	380,	329,	278,	315,	355,
Cape and Natal	495,	461,	323,	358,	431,
Br. W. Co. of Af., Ascension and St. Helena	75,	66,	71,	87,	77,
Mauritius	34,	29,	31,	31,	40,
Channel Islands	230,	223,	210,	197,	189,
Other possessions	75,	44,	36,	53,	82,
<i>Total—British Possessions</i>	7,095,	6,443,	6,094,	6,948,	6,823,
General Total	£ 64,043,	59,349,	56,234,	58,359,	62,942,

Trade of United Kingdom, 1889-88-87.—Distribution of Exports* from United Kingdom, according to their Declared Real Value; and the Declared Real Value (Ex-duty) of Imports at Port of Entry, and therefore including Freight and Importer's Profit.

Merchandise (excluding Gold and Silver) Imported from, and Exported to, the following Foreign Countries, &c.	[000's omitted.]					
	1889.		1888.		1887.	
	Imports from	Exports to	Imports from	Exports to	Imports from	Exports to
I.—FOREIGN COUNTRIES:	£	£	£	£	£	£
Northern Europe; viz., Russia, Sweden, Norway, Denmark & Iceland, & Heligoland	47,720,	12,182,	44,540,	10,644,	31,299,	9,252,
Central Europe; viz., Germany, Holland, and Belgium	71,365,	35,234,	68,233,	30,962,	64,453,	30,640,
Western Europe; viz., France, Portugal (with Azores, Madeira, &c.), and Spain (with Gibraltar and Canaries)	60,688,	22,645,	53,133,	21,633,	50,295,	20,310,
Southern Europe; viz., Italy, Austrian em- pire, Greece, Roumania, Bulgaria, & Malta	10,964,	11,224,	11,256,	9,528,	10,060,	11,518,
Levant; viz., Turkey, Asiatic and European (including Cyprus), and Egypt	13,745,	9,103,	11,337,	7,977,	11,307,	8,638,
Northern Africa; viz., Tripoli, Tunis, Algeria and Morocco	2,003,	968,	1,601,	831,	1,303,	718,
Western Africa	1,027,	1,450,	967,	1,148,	1,122,	1,095,
Eastern Africa; with African Ports on Red Sea, Aden, Arabia, Persia, Bourbon, and Kooria Moorla Island	780,	894,	556,	643,	589,	617,
Indian Seas, Siam, Sumatra, Java, Philip- pines; other Islands	5,038,	3,443,	5,191,	3,152,	3,210,	2,366,
South Sea Islands	59,	132,	82,	94,	103,	94,
China and Japan, including Hong Kong	8,317,	11,097,	8,950,	12,982,	8,756,	12,324,
United States of America	95,340,	30,299,	79,314,	28,896,	82,932,	29,548,
Mexico and Central America	1,661,	2,510,	1,596,	2,205,	1,836,	2,077,
Foreign West Indies, Hayti, &c.	248,	2,595,	479,	2,344,	356,	2,428,
South America (Northern), New Granada, Venezuela, and Ecuador	603,	2,209,	762,	2,076,	605,	2,325,
" (Pacific), Peru, Bolivia, Chili, and Patagonia	4,546,	3,897,	5,188,	3,455,	3,983,	2,782,
" (Atlantic) Brazil, Uruguay, and Argentine Republic	7,521,	19,334,	8,292,	15,685,	7,831,	13,805,
Whale Fisheries; Grnld., Davis' Straits, Southn. Whale Fishery, Falkland Islands, and French Possessions in North America	108,	64,	109,	29,	166,	40,
<i>Total—Foreign Countries</i>	331,733,	169,280,	301,586,	154,284,	280,206,	150,577,
II.—BRITISH POSSESSIONS:						
British India, Ceylon, and Singapore	44,336,	34,141,	38,717,	35,829,	37,621,	33,674,
Austral. Cols.—N. So. W., Victoria & Queensld.	16,106,	17,089,	16,334,	19,690,	14,223,	14,383,
" " So. Aus., W. Aus., Tasm., N. Zealand, & Fiji Islands	10,714,	5,665,	9,626,	5,703,	9,172,	5,333,
British North America	12,184,	8,115,	9,230,	7,555,	10,542,	8,091,
" W. Indies with Btsh. Guiana & Honduras	3,657,	3,168,	3,608,	3,135,	3,265,	2,812,
Cape and Natal	6,118,	8,947,	5,614,	5,923,	5,082,	4,991,
Br. W. Co. of Af., Ascension and St. Helena	915,	794,	840,	762,	760,	679,
Mauritius	422,	298,	276,	254,	165,	283,
Channel Islands	938,	595,	896,	599,	946,	575,
<i>Total—British Possessions</i>	95,390,	78,812,	85,141,	79,450,	81,776,	70,821,
General Total	£ 427,123,	248,092,	386,727,	233,734,	361,982,	221,398,

* i.e., British and Irish produce and manufactures.

IMPORTS.—(United Kingdom).—For the Years 1889-83-87-86-85.—Declared Real Value (*Ex-duty*), at Port of Entry (and therefore including Freight and Importer's Profit), of Articles of Foreign and Colonial Merchandise Imported into the United Kingdom.

[000's omitted.]

FOREIGN ARTICLES IMPORTED.		1889.	1888.	1887.	1886.	1885.
		£	£	£	£	£
RAW MATLS.— <i>Textile, &c.</i>	Cotton, Raw ...	45,269,	39,401,	39,897,	37,792,	36,044,
	Wool	30,301,	27,652,	25,983,	24,308,	26,248,
	Silk*	15,387,	13,793,	13,302,	13,269,	12,631,
	Flax	3,066,	2,992,	2,708,	2,416,	3,188,
	Hemp and Jute	8,694,	6,710,	5,847,	4,737,	5,459,
	Indigo	1,783,	1,704,	1,673,	1,891,	2,133,
		104,500,	92,252,	89,410,	84,413,	85,703,
" "	<i>Various.</i> Hides	3,074,	3,002,	3,132,	3,610,	3,863,
	Oils	2,618,	2,197,	2,326,	2,434,	2,987,
	Metals	22,085,	23,243,	16,618,	15,040,	16,287,
	Tallow	1,645,	1,433,	1,074,	1,297,	1,582,
	Timber	19,826,	14,645,	11,989,	12,531,	15,245,
		49,248,	44,520,	35,139,	34,912,	39,964,
" "	<i>Agricul.</i> Guano	191,	202,	186,	538,	242,
	Seeds	7,947,	7,579,	6,992,	6,862,	7,838,
		8,138,	7,781,	7,178,	7,400,	8,080,
TROPICAL, &c., PRODUCE.	Tea	10,023,	10,216,	9,859,	11,360,	10,718,
	Coffee and Chicli.	4,411,	3,659,	4,334,	3,412,	3,380,
	Sugar & Molasses	22,653,	18,260,	16,515,	15,998,	18,447,
	Tobacco	3,974,	2,821,	3,409,	3,782,	3,901,
	Rice	2,689,	2,314,	1,878,	2,466,	2,173,
	Fruits	6,215,	6,146,	5,771,	5,515,	6,015,
	Wines	5,909,	5,386,	5,468,	5,135,	5,125,
	Spirits	1,859,	1,759,	2,012,	2,032,	1,967,
		57,733,	50,561,	49,246,	49,700,	51,726,
FOOD	Grain and Meal.	50,808,	50,675,	47,819,	43,225,	52,749,
	Provisions	47,454,	41,775,	40,526,	38,013,	39,859,
		98,262,	92,450,	88,345,	81,238,	92,608,
Remainder of Enumerated Articles		65,103,	58,939,	52,630,	52,606,	55,457,
TOTAL ENUMERATED IMPORTS		382,984,	346,503,	321,948,	310,269,	333,538,
Add for UNENUMERATED IMPORTS (say)		44,227,	40,079,	39,987,	39,112,	40,296,
TOTAL IMPORTS		427,211,	386,582,	361,935,	349,381,	373,834,

* "Silk," inclusive of manufactured silk, "not made up."

EXPORTS.—(United Kingdom).—For the Years 1889-88-87-86-85.—Declared Real Value, at Port of Shipment, of Articles of BRITISH and IRISH Produce and Manufactures Exported from the United Kingdom.

[000's omitted.]

BRITISH PRODUCE, &c., EXPORTED.		1889.	1888.	1887.	1886.	1885.
		£	£	£	£	£
MANFRS.— <i>Textile.</i>	Cotton Manufactures..	58,826,	60,325,	59,577,	57,365,	55,113,
	„ Yarn	11,711,	11,656,	11,379,	11,489,	11,859,
	Woollen Manufactures	21,340,	19,991,	20,585,	19,738,	18,847,
	„ Yarn	4,342,	4,052,	3,970,	4,406,	4,883,
	Silk Manufactures.....	2,507,	2,666,	2,326,	2,234,	1,957,
	„ Yarn	509,	388,	439,	436,	376,
	Linen Manufactures	5,777,	5,553,	5,455,	5,257,	4,962,
	„ Yarn	839,	887,	939,	935,	985,
		105,851,	105,518,	104,670,	101,860,	98,482,
		4,977,	4,659,	3,941,	3,902,	4,171,
„ <i>Sewed.</i>	Apparel	2,251,	2,322,	2,349,	2,094,	2,308,
	Haberdy. and Milnry.					
		7,228,	6,981,	6,290,	5,996,	6,479,
METALS, &c.	Hardware	2,988,	3,167,	2,920,	2,847,	2,849,
	Machinery	15,255,	12,933,	11,146,	10,134,	11,075,
	Iron	29,153,	26,373,	25,000,	21,723,	21,717,
	Copper and Brass.....	3,787,	3,391,	3,005,	2,904,	3,468,
	Lead and Tin	1,282,	1,430,	1,147,	1,057,	885,
	Coals and Culm	14,794,	11,341,	10,176,	9,837,	10,632,
		67,259,	58,635,	53,394,	48,502,	50,626,
Ceramic Manufcts. Earthenware and Glass		3,240,	3,104,	2,911,	2,775,	2,696,
<i>Indigenous Mnfrs.</i> <i>and Products.</i>	Beer and Ale.....	1,858,	1,706,	1,678,	1,583,	1,645,
	Butter	144,	146,	156,	165,	176,
	Cheese	49,	51,	57,	51,	52,
	Candles	231,	199,	181,	202,	200,
	Salt.....	539,	487,	525,	592,	673,
	Spirits	1,176,	1,137,	1,018,	890,	859,
	Soda	—	—	—	—	—
		3,997,	3,726,	3,615,	3,483,	3,605,
<i>Various Manufcts.</i>	Books, Printed	1,295,	1,245,	1,175,	1,117,	1,143,
	Furniture	—	—	—	—	—
	Leather Manufactures	2,787,	2,683,	2,469,	2,223,	2,307,
	Soap	503,	482,	451,	446,	473,
	Plate and Watches	438,	392,	329,	368,	328,
	Stationery	965,	909,	831,	855,	854,
		5,988,	5,711,	5,255,	5,009,	5,105,
Remainder of Enumerated Articles		37,230,	33,847,	30,886,	30,725,	31,826,
Unenumerated Articles.....		17,299,	16,212,	14,377,	14,014,	14,212,
TOTAL EXPORTS.....		248,092,	233,734,	221,398,	212,364,	213,031,

SHIPPING.—(United Kingdom).—Account of Tonnage of Vessels Entered and Cleared with Cargoes, from and to Various Countries, during the Years ended December, 1889-88-87.

Countries from whence Entered and to which Cleared.	Total British and Foreign.					
	1889.		1888.		1887.	
	Entered.	Cleared.	Entered.	Cleared.	Entered.	Cleared.
FOREIGN COUNTRIES.	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.
Russia { Northern ports	1,787,349	1,243,619	1,709,211	1,094,261	1,399,469	1,109,601
{ Southern „	930,603	204,132	1,033,088	214,426	549,432	75,636
Sweden	1,592,338	1,200,601	1,417,380	1,087,397	1,307,060	999,113
Norway	1,152,634	742,419	1,009,401	694,871	999,524	639,788
Denmark.....	348,498	1,064,859	343,155	1,038,399	289,554	919,132
Germany.....	1,982,872	3,512,456	2,043,730	3,225,806	1,902,238	2,959,270
Holland	1,872,415	1,827,850	2,013,233	1,702,945	1,932,427	1,514,146
Belgium	1,369,572	1,197,079	1,324,345	1,193,239	1,358,670	1,177,311
France	2,122,184	3,533,130	2,150,115	3,605,588	2,131,241	3,635,215
Spain	2,626,536	1,270,798	2,403,960	1,219,234	2,609,906	1,164,346
Portugal	152,486	458,336	155,354	440,761	157,785	390,859
Italy	273,479	2,317,742	276,620	2,220,938	244,777	2,185,861
Austrian territories	66,112	79,941	66,813	58,357	64,585	94,808
Greece.....	91,318	140,884	94,771	144,004	91,356	122,152
Roumania	268,544	86,904	315,378	110,197	351,013	101,233
Turkey	298,056	446,463	231,203	431,026	174,891	392,879
Egypt	300,719	912,627	316,743	907,716	308,436	860,493
United States of America	5,212,581	3,228,754	4,406,409	3,080,890	4,682,158	3,523,141
Mexico, Foreign West Indies, and Central America }	82,520	406,265	108,392	397,427	94,172	406,999
Brazil	196,502	765,749	237,317	658,184	218,918	582,265
Peru.....	41,679	44,998	114,483	152,617	88,597	72,128
Chili	203,924	286,758	123,571	309,041	146,711	202,423
China	140,525	57,627	163,365	88,989	196,130	78,754
Other countries	1,075,795	2,367,921	1,121,287	1,849,429	939,189	1,565,180
<i>Total, Foreign Countries</i>	24,189,241	27,397,912	23,179,829	25,925,742	22,238,239	24,772,735
BRITISH POSSESSIONS.						
North American Colonies	1,446,770	812,984	1,163,453	771,112	1,205,884	791,785
East Indies, including Ceylon, Singapore, and Mauritius }	1,458,661	1,830,438	1,373,929	2,142,195	1,320,998	2,107,242
Australia and New Zealand	597,612	954,087	603,331	1,058,985	532,144	856,153
West Indies	140,776	279,348	142,013	249,300	75,947	255,485
Channel Islands.....	334,880	240,709	336,500	250,033	332,326	244,937
Other possessions	349,880	1,533,403	278,127	1,267,073	294,272	1,142,300
<i>Total, British Possessions</i>	4,328,579	5,650,969	3,897,353	5,738,698	3,761,571	5,397,902
TOTAL FOREIGN COUNTRIES AND BRITISH POSSESSIONS.						
Twelve Months { 1889	28,517,820	33,048,881	—	—	—	—
{ '88.....	—	—	27,077,182	31,664,440	—	—
{ '87.....	—	—	—	—	25,999,810	30,170,637

GOLD AND SILVER BULLION AND SPECIE.—(United Kingdom.)

—Declared Real Value of, IMPORTED AND EXPORTED for the Years
1889-88-87.

[000's omitted.]

Countries.	1889.		1888.		1887.	
	Gold.	Silver.	Gold.	Silver.	Gold.	Silver.
Imported from—	£	£	£	£	£	£
Australia	4,169,	28,	3,945,	33,	321,	59,
S. America, Brazil, } Mexico, W. Indies }	2,801,	2,146,	786,	2,264,	2,982,	3,269,
United States	2,569,	3,976,	2,251,	2,384,	37,	2,214,
	9,539,	6,150,	6,982,	4,681,	3,340,	5,542,
France	1,673,	2,281,	3,107,	840,	1,921,	1,242,
Germany, Holland, } Belg., and Sweden }	2,895,	388,	1,860,	387,	710,	740,
Portugal, Spain, } and Gibraltar }	64,	164,	82,	169,	73,	124,
Malta and Egypt.....	676,	150,	1,395,	34,	2,222,	46,
China, with Hong } Kong and Japan }	658,	—	1,057,	—	1,064,	—
West Coast of Africa	170,	27,	146,	40,	148,	46,
All other Countries	2,011,	25,	1,161,	63,	462,	85,
Totals Imported	17,686,	9,185,	15,790,	6,214,	9,940,	7,825,
Exported to—						
France	1,692,	126,	3,	545,	24,	475,
Germany, Holland, } Belg. & Sweden }	993,	47,	1,756,	256,	2,676,	174,
Portugal, Spain, } and Gibraltar }	2,394,	51,	1,941,	352,	960,	205,
	5,079,	224,	3,700,	1,153,	3,660,	854,
B. India, China, } Hong Kong and } Japan	1,669,	9,621,	632,	5,841,	848,	6,326,
United States	10,	31,	4,	32,	1,761,	35,
South Africa	2,391,	242,	1,420,	70,	715,	68,
S. America, Brazil, } Mexico, W. Indies }	4,097,	322,	7,688,	306,	1,935,	318,
All other Countries	1,209,	226,	1,500,	213,	404,	206,
Totals Exported	14,455,	10,666,	14,944,	7,615,	9,323,	7,807,
Excess of imports	3,231,	—	846,	—	617,	18,
„ exports	—	1,481,	—	1,401,	—	—

BRITISH CORN.—*Gazette Average Prices* (ENGLAND AND WALES),
Weekly for 1889.

Weeks ended on Saturday.	Weekly Average. (Per Imperial Quarter.)			Weeks ended on Saturday.	Weekly Average. (Per Imperial Quarter.)		
	Wheat.	Barley.	Oats.		Wheat.	Barley.	Oats.
1889.	<i>s. d.</i>	<i>s. d.</i>	<i>s. d.</i>	1889.	<i>s. d.</i>	<i>s. d.</i>	<i>s. d.</i>
Jan. 5	30 4	26 9	16 6	July 6	28 4	20 9	19 7
„ 12	30 2	26 8	16 6	„ 13	29 3	19 9	18 11
„ 19	30 2	27 —	16 4	„ 20	29 4	21 1	19 3
„ 26	30 1	26 7	16 3	„ 27	30 —	25 —	19 10
Feb. 2	29 9	26 7	16 2	Aug. 3	30 8	19 11	20 6
„ 9	29 7	26 4	16 7	„ 10	30 11	19 10	19 5
„ 16	29 6	26 2	16 5	„ 17	30 9	19 5	19 5
„ 23	29 5	26 5	16 8	„ 24	30 5	19 6	18 11
March 2	29 7	26 1	16 8	„ 31	31 2	24 6	19 6
„ 9	30 1	26 —	16 10	Sept. 7	31 —	29 9	19 2
„ 16	30 2	25 10	17 2	„ 14	30 2	28 10	17 11
„ 23	30 5	26 —	17 —	„ 21	29 5	28 11	17 3
„ 30	30 2	25 7	16 11	„ 28	29 1	29 —	16 11
April 6	30 1	25 4	17 —	Oct. 5	29 3	29 4	16 8
„ 13	25 11	25 2	17 8	„ 12	29 4	29 8	16 8
„ 20	29 10	25 1	17 9	„ 19	29 10	30 4	16 4
„ 27	29 7	24 5	17 8	„ 26	30 4	30 11	16 11
May 4	29 10	24 7	18 6	Nov. 2	30 3	31 3	16 8
„ 11	29 10	23 11	18 8	„ 9	30 3	31 —	17 1
„ 18	29 11	22 10	18 1	„ 16	30 2	30 4	17 —
„ 25	29 5	24 —	18 2	„ 23	30 —	29 11	17 4
June 1	29 —	21 2	18 1	„ 30	30 1	29 9	17 6
„ 8	28 9	20 9	18 11	Dec. 7	30 2	30 2	17 7
„ 15	28 4	21 —	19 —	„ 14	30 2	29 10	17 11
„ 22	28 7	24 8	18 7	„ 21	30 1	30 4	18 2
„ 29	27 11	19 11	18 11	„ 28	29 10	30 6	18 2

BRITISH CORN.—*Gazette Average Prices (ENGLAND AND WALES),
Summary of, for 1889, with those for 1888, added for Comparison.*

Average for	Per Imperial Quarter, 1889.						Per Imperial Quarter, 1888.					
	Wheat.		Barley.		Oats.		Wheat.		Barley.		Oats.	
	s.	d.	s.	d.	s.	d.	s.	d.	s.	d.	s.	d.
January.....	30	2	26	9	16	4	31	1	30	3	15	11
February	29	6	26	4	16	5	30	4	30	—	15	10
March	30	1	25	10	16	11	30	4	29	8	15	8
<i>First quarter</i>	29	11	26	4	16	7	30	7	29	11	15	9
April	29	10	25	—	17	6	30	4	30	4	15	11
May	29	9	23	10	18	4	31	5	30	6	16	8
June	28	6	21	6	18	8	31	6	24	11	17	1
<i>Second quarter....</i>	29	4	23	5	18	2	31	1	28	7	16	6
July	29	2	21	7	19	4	31	10	24	3	17	3
August	30	9	20	7	19	6	35	—	21	2	19	—
September.....	29	11	29	1	17	9	35	10	28	6	18	2
<i>Third quarter</i>	29	11	23	9	18	10	34	2	24	11	18	1
October	29	8	30	—	16	7	31	5	29	1	16	5
November	30	1	30	5	17	1	31	10	28	1	16	5
December	30	—	30	2	17	11	31	—	27	1	16	3
<i>Fourth quarter....</i>	29	11	30	2	17	2	31	5	28	1	16	4
THE YEAR	29	9	25	11	17	8	31	10	27	10	16	8

REVENUE OF THE UNITED KINGDOM.

Net Produce in QUARTERS and YEARS ended 31st Dec., 1889-88-87-86.

[000's omitted.]

QUARTERS, ended 31st Dec.	1889.	1888.	1889.		Corresponding Quarters.	
			Less.	More.	1887.	1886.
	£	£	£	£	£	£
Customs	5,879,	5,516,	—	363,	5,452,	5,557,
Excise	7,015,	7,870,	855,	—	7,850,	7,780,
Stamps	3,480,	2,960,	—	520,	3,180,	3,060,
Taxes	40,	35,	—	5,	35,	30,
Post Office	2,390,	2,360,	—	30,	2,370,	2,360,
Telegraph Service ...	590,	515,	—	75,	465,	445,
Property Tax	19,394,	19,256,	855,	993,	19,352,	19,232,
	1,110,	1,010,	—	100,	1,130,	1,350,
Crown Lands	20,504,	20,266,	855,	1,093,	20,482,	20,582,
	160,	160,	—	—	150,	130,
Interest on Advances	113,	114,	1	—	21,	301,
Miscellaneous	801,	727,	—	74,	723,	802,
Totals	21,578,	21,267,	856,	1,167,	21,376,	21,815,
			NET INCR. £311,			

YEARS, ended 31st Dec.	1889.	1888.	1889.		Corresponding Years.	
			Less.	More.	1887.	1886.
	£	£	£	£	£	£
Customs	20,423,	19,927,	—	496,	19,747,	20,066,
Excise	24,625,	25,660,	1,035,	—	25,550,	25,280,
Stamps	12,770,	13,130,	360,	—	12,385,	11,800,
Taxes	2,975,	2,945,	—	30,	2,940,	2,920,
Post Office	9,460,	8,890,	—	570,	8,580,	8,500,
Telegraph Service ...	2,255,	2,040,	—	215,	1,915,	1,780,
Property Tax	72,508,	72,592,	1,395,	1,311,	71,117,	70,346,
	12,480,	13,695,	1,215,	—	15,615,	16,100,
Crown Lands	84,988,	86,287,	2,610,	1,311,	86,732,	86,446,
	430,	420,	—	10,	390,	380,
Interest on Advances	286,	334,	48,	—	453,	1,084,
Miscellaneous	3,259,	3,132,	—	127,	2,788,	2,929,
Totals	88,963,	90,173,	2,658,	1,448,	90,363,	90,839,
			NET DECR. £1,210,			

LONDON CLEARING; CIRCULATION, PRIVATE AND PROVINCIAL.

The London Clearing, and the Average Amount of Promissory Notes in Circulation in ENGLAND and WALES on Saturday in each Week during the Year 1889; and in SCOTLAND and IRELAND, at the Dates, as under.

[0,000's omitted.]

ENGLAND AND WALES.					SCOTLAND.				IRELAND.		
DATES. Saturday.	London. Cleared in each Week on the preceding Wednesday.	Private Banks. (Fixed Issues, 3,09).	Joint Stock Banks. (Fixed Issues, 2,11).	TOTAL. (Fixed Issues, 5,20).	Average for Four Weeks ending	£5 and upwards.	Under £5.	TOTAL. (Fixed Issues, 2,68).	£5 and upwards	Under £5.	TOTAL. (Fixed Issues, 6,35).
1889.	£	£	£	£	1889.	£	£	£	£	£	£
Jan. 5.....	183,45	1,15	1,31	2,46	Jan. 5...	1,82	4,04	5,86	3,59	3,12	6,71
" 12.....	145,42	1,15	1,33	2,48							
" 19.....	163,19	1,13	1,31	2,44							
" 26.....	133,92	1,09	1,29	2,38							
Feb. 2.....	159,56	1,08	1,28	2,36	Feb. 2...	1,69	3,75	5,44	3,52	3,00	6,52
" 9.....	162,74	1,07	1,28	2,35							
" 16.....	127,70	1,05	1,26	2,31							
" 23.....	190,35	1,04	1,25	2,29							
Mar. 2.....	127,09	1,03	1,27	2,30	Mar. 2...	1,63	3,73	5,36	3,49	2,88	6,37
" 9.....	189,20	—	—	—							
" 16.....	128,95	1,04	1,28	2,32							
" 23.....	161,86	1,05	1,29	2,34							
" 30.....	119,17	1,08	1,33	2,41	" 30...	1,62	3,72	5,34	3,57	2,78	6,35
April 6.....	180,06	1,11	1,37	2,48							
" 13.....	130,96	1,11	1,38	2,49							
" 20.....	184,62	1,11	1,38	2,49							
" 27.....	89,84	1,11	1,38	2,49	April 27...	1,70	3,87	5,57	3,75	2,83	6,58
May 4.....	170,31	1,11	1,40	2,51							
" 11.....	130,27	—	—	—							
" 18.....	176,37	1,11	1,40	2,51							
" 25.....	144,13	1,10	1,36	2,46	May 25...	2,09	4,23	6,32	3,83	2,80	6,63
June 1.....	112,56	1,08	1,35	2,43							
" 8.....	178,24	1,08	1,35	2,43							
" 15.....	95,92	1,06	1,32	2,38							
" 22.....	159,69	1,04	1,29	2,33	June 22...	2,02	4,21	6,23	3,74	2,77	6,51
" 29.....	123,64	1,06	1,28	2,34							
July 6.....	198,99	1,08	1,29	2,37							
" 13.....	143,02	—	—	—							
" 20.....	164,26	1,04	1,26	2,30	July 20...	1,84	4,15	5,99	3,58	2,70	6,28
" 27.....	114,10	1,03	1,24	2,27							
Aug. 3.....	157,12	1,03	1,24	2,27							
" 10.....	124,60	1,04	1,23	2,27							
" 17.....	154,31	1,02	1,22	2,24	Aug. 17...	1,80	4,06	5,86	3,54	2,69	6,23
" 24.....	135,77	1,01	1,21	2,22							
" 31.....	113,34	1,00	1,22	2,22							
Sept. 7.....	163,17	1,01	1,22	2,23							
" 14.....	109,67	1,01	1,23	2,24	Sept. 14...	1,80	4,12	5,92	3,55	2,71	6,26
" 21.....	153,20	1,03	1,25	2,28							
" 28.....	109,27	1,06	1,28	2,34							
Oct. 5.....	187,96	1,14	1,36	2,50							
" 12.....	136,60	—	—	—	Oct. 12...	1,79	4,19	5,98	3,94	2,93	6,87
" 19.....	161,83	1,14	1,40	2,54							
" 26.....	133,58	1,13	1,39	2,52							
Nov. 2.....	151,69	1,14	1,39	2,53							
" 9.....	137,96	1,14	1,39	2,53	Nov. 9...	1,91	4,39	6,30	4,33	3,22	7,55
" 16.....	124,86	1,14	1,38	2,52							
" 23.....	169,77	1,13	1,39	2,52							
" 30.....	115,82	1,12	1,37	2,49							
Dec. 7.....	175,42	1,11	1,34	2,45	Dec. 7...	2,13	4,62	6,75	4,21	3,17	7,38
" 14.....	111,68	1,09	1,32	2,41							
" 21.....	164,77	1,08	1,32	2,40							
" 28.....	117,27	1,08	1,31	2,39							

BANK OF ENGLAND.

Pursuant to the Act 7th and 8th Victoria, cap. 32 (1844)

[0,000's omitted.]

1	2	3	4	5	6	7
ISSUE DEPARTMENT.					COLLATERAL COLUMNS.	
Liabilities.	DATES. (Wednesdays.)	Assets.			Notes in Hands of Public. (Col. 1 minus col. 16.)	Minimum Rates of Discount at Bank of England.
Notes Issued.		Government Debt.	Other Securities.	Gold Coin and Bullion.		
£ Mlns.	1889.	£ Mlns.	£ Mlns.	£ Mlns.	£ Mlns.	Per cent.
34.64	Jan. 2	11.02	5.18	18.44	24.48	(End of 1888) 5
35.68	" 9	11.02	5.18	19.48	24.18	9 Jan. 4
36.00	" 16	11.02	5.18	19.80	23.84	
36.40	" 23	11.02	5.18	20.20	23.44	23 " 3½
36.81	" 30	11.02	5.18	20.61	23.27	
37.04	Feb. 6	11.02	5.18	20.84	23.47	
36.82	" 13	11.02	5.18	20.62	23.16	
36.89	" 20	11.02	5.18	20.69	22.98	
36.89	" 27	11.02	5.18	20.69	23.04	
37.17	Mar. 6	11.02	5.18	20.97	23.40	
37.24	" 13	11.02	5.18	21.04	23.10	
37.31	" 20	11.02	5.18	21.11	23.09	
37.65	" 27	11.02	5.18	21.45	23.66	
37.63	April 3	11.02	5.18	21.43	24.49	
37.56	" 10	11.02	5.18	21.86	24.40	
37.44	" 17	11.02	5.18	21.24	24.57	17 April..... 2½
37.42	" 24	11.02	5.18	21.22	24.28	
37.36	May 1	11.02	5.18	21.16	24.66	
37.12	" 8	11.02	5.18	20.92	24.59	
37.90	" 15	11.02	5.18	21.70	24.57	
38.30	" 22	11.02	5.18	22.10	24.35	
38.32	" 29	11.02	5.18	22.12	24.28	
37.80	June 5	11.02	5.18	21.60	24.73	
38.06	" 12	11.02	5.18	21.86	24.57	
38.82	" 19	11.02	5.18	22.62	24.39	
39.20	" 26	11.02	5.18	23.00	24.75	
38.92	July 3	11.02	5.18	22.72	25.53	
38.23	" 10	11.02	5.18	22.03	25.42	
38.12	" 17	11.02	5.18	21.92	25.35	
37.96	" 24	11.02	5.18	21.76	25.10	
36.99	" 31	11.02	5.18	20.79	25.50	
36.35	Aug. 7	11.02	5.18	20.15	25.54	7 Aug. 3
36.35	" 14	11.02	5.18	20.15	25.25	
36.45	" 21	11.02	5.18	20.25	24.95	
36.40	" 28	11.02	5.18	20.20	24.83	28 " 4
36.27	Sept. 4	11.02	5.18	20.07	24.95	
36.25	" 11	11.02	5.18	20.05	24.67	
36.44	" 18	11.02	5.18	20.24	24.57	
36.16	" 25	11.02	5.18	19.96	24.47	25 Sept. ... 5
35.12	Oct. 2	11.02	5.18	18.92	25.68	
35.01	" 9	11.02	5.18	18.81	25.21	
35.18	" 16	11.02	5.18	18.98	24.86	
35.42	" 23	11.02	5.18	19.22	24.55	
35.68	" 30	11.02	5.18	19.48	24.52	
35.59	Nov. 6	11.02	5.18	19.39	24.60	
35.28	" 13	11.02	5.18	19.08	24.27	
35.10	" 20	11.02	5.18	18.90	23.09	
35.48	" 27	11.02	5.18	19.28	23.83	
35.29	Dec. 4	11.02	5.18	19.09	24.28	
34.94	" 11	11.02	5.18	18.74	23.87	
34.43	" 18	11.02	5.18	18.23	23.93	
33.52	" 25	11.02	5.18	17.32	24.42	

—WEEKLY RETURN.

for Wednesday in each Week, during the Year 1889.

[0,000's omitted.]

8	9	10	11	12	13	14	15	16	17	18
BANKING DEPARTMENT.										
Liabilities.					DATES. (Wednesdys.)	Assets.				Totals of Liabili- ties and Assets.
Capital and Rest.		Deposits.		Seven Day and other Bills.		Securities.		Reserve.		
Capital.	Rest.	Public.	Private.			Government.	Other.	Notes.	Gold and Silver Coin.	
£	£	£	£	£	1889.	£	£	£	£	£
Mlns.	Mlns.	Mlns.	Mlns.	Mlns.		Mlns.	Mlns.	Mlns.	Mlns.	Mlns.
14.55	3.22	6.38	30.54	.16	Jan. 2	14.46	29.30	10.16	.93	54.85
14.55	3.44	6.46	25.44	.21	" 9	17.16	20.45	11.50	.99	50.10
14.55	3.45	5.36	26.00	.22	" 16	16.22	20.19	12.16	1.02	49.59
14.55	3.46	4.91	25.41	.21	" 23	14.56	19.99	12.96	1.03	48.54
14.55	3.45	6.40	24.80	.23	" 30	14.56	20.32	13.54	1.01	49.43
14.55	3.50	8.35	22.50	.22	Feb. 6	14.50	19.94	13.57	1.12	49.13
14.55	3.51	9.41	23.30	.19	" 13	14.50	21.71	13.66	1.10	50.97
14.55	3.52	9.99	23.01	.20	" 20	14.50	21.71	13.91	1.16	51.28
14.55	3.46	10.63	23.34	.19	" 27	14.50	22.78	13.85	1.04	52.17
14.55	3.78	10.47	23.95	.21	Mar. 6	14.50	23.64	13.77	1.04	52.95
14.55	3.79	11.10	24.96	.19	" 13	15.50	23.83	14.14	1.12	54.59
14.55	3.83	12.58	23.82	.21	" 20	15.50	24.03	14.22	1.24	54.99
14.55	3.84	12.45	24.20	.19	" 27	15.50	24.51	13.99	1.23	55.23
14.55	3.85	12.36	24.09	.22	April 3	15.71	25.02	13.14	1.20	55.07
14.55	3.15	9.49	25.09	.21	" 10	15.96	21.91	13.16	1.26	52.29
14.55	3.15	9.44	24.71	.25	" 17	15.96	22.16	12.87	1.11	52.10
14.55	3.15	9.52	23.84	.18	" 24	15.96	21.07	13.14	1.06	51.23
14.55	3.15	9.12	25.75	.20	May 1	15.96	23.14	12.70	.98	52.78
14.55	3.15	8.44	24.38	.21	" 8	15.96	21.27	12.53	.97	50.73
14.55	3.16	10.31	28.22	.21	" 15	16.05	25.94	13.33	1.14	56.46
14.55	3.16	10.41	25.15	.21	" 22	16.02	22.39	13.95	1.13	53.49
14.55	3.13	10.19	25.27	.21	" 29	16.02	22.18	14.04	1.12	53.36
14.55	3.10	9.56	24.84	.20	June 5	16.02	22.13	13.07	1.03	52.25
14.55	3.10	9.29	24.56	.19	" 12	15.00	22.17	13.49	1.03	51.69
14.55	3.10	10.20	24.93	.21	" 19	15.01	22.60	14.43	.96	53.00
14.55	3.11	10.51	24.46	.20	" 26	15.01	22.43	14.45	.94	52.83
14.55	3.15	9.31	25.10	.22	July 3	14.76	23.18	13.39	.99	52.32
14.55	3.34	6.96	24.05	.24	" 10	18.71	20.66	12.81	.96	53.14
14.55	3.36	6.05	29.63	.24	" 17	19.71	20.46	12.77	.89	53.83
14.55	3.36	5.42	30.72	.20	" 24	20.32	20.31	12.86	.87	54.26
14.55	3.35	5.39	27.94	.19	" 31	19.22	19.96	11.49	.76	51.43
14.55	3.39	4.46	27.34	.19	Aug. 7	17.84	20.53	10.81	.76	49.94
14.55	3.40	3.62	28.16	.23	" 14	17.58	20.48	11.10	.80	49.96
14.55	3.43	4.14	25.42	.19	" 21	15.37	19.96	11.50	.89	47.72
14.55	3.37	4.60	25.41	.20	" 28	14.89	20.94	11.57	.74	48.14
14.55	3.74	4.59	24.80	.20	Sept. 4	14.76	21.04	11.32	.76	47.88
14.55	3.74	4.40	24.76	.21	" 11	14.56	20.68	11.58	.84	47.66
14.55	3.74	4.98	24.12	.20	" 18	14.56	20.58	11.87	.59	47.60
14.55	3.78	5.22	24.00	.19	" 25	14.56	20.79	11.69	.70	47.74
14.55	3.78	4.61	26.02	.18	Oct. 2	15.06	23.82	9.44	.82	49.14
14.55	3.09	4.44	26.55	.20	" 9	17.66	20.67	9.80	.71	48.84
14.55	3.12	4.13	26.44	.21	" 16	17.36	19.95	10.32	.83	48.46
14.55	3.13	4.04	26.25	.18	" 23	16.26	20.19	10.87	.84	48.16
14.55	3.12	4.07	25.39	.19	" 30	15.56	19.68	11.16	.92	47.34
14.55	3.13	4.14	25.61	.19	Nov. 6	15.76	19.95	10.99	.92	47.62
14.55	3.14	4.19	24.53	.18	" 13	15.62	19.00	11.01	.96	46.59
14.55	3.15	5.36	23.85	.18	" 20	15.12	19.94	11.11	.92	47.09
14.55	3.12	6.01	22.77	.18	" 27	14.92	19.15	11.65	.92	46.64
14.55	3.11	4.39	26.65	.18	Dec. 4	15.56	21.44	11.01	.87	48.88
14.55	3.12	4.28	26.05	.20	" 11	15.80	20.43	11.07	.90	48.20
14.55	3.12	5.37	24.09	.22	" 18	15.81	20.31	10.50	.74	47.36
14.55	3.13	6.01	22.63	.18	" 25	15.25	21.66	9.10	.49	46.50

FOREIGN EXCHANGES.—*Quotations as under, LONDON on Paris, Hamburg, and Calcutta;—and New York, Calcutta, and Hong Kong, on LONDON, for 1889.*

1	2	3	4		5	6	7	8		9
DATES. (Thursdays)	London	London	Calcutta.		Indian Council Bills. Minimum Price per Rupee.	New York on London. 60 d. s.	Hong Kong on London. 4 m. d.	Price per Ounce.		Standard Silver in Bars.
	on Paris.	on Hamburg.	London					Gold Bars (Fine).		
	3 m. d.	3 m. d.	on Calcutta.							
1889.			s.	d.	d.	Per cent.	s.	d.	s.	d.
Jan. 3 ...	25°58 $\frac{3}{4}$	20°61	1	4 $\frac{1}{2}$	16 $\frac{5}{16}$	4°84 $\frac{1}{4}$	3	1 $\frac{1}{2}$	77	9
„ 17 ...	25°53 $\frac{3}{4}$	20°55	1	4 $\frac{1}{4}$	16 $\frac{3}{8}$	4°85 $\frac{1}{2}$	3	1	77	9
Feb. 7 ...	25°45	20°52	1	4 $\frac{5}{16}$	16 $\frac{1}{2}$	4°85 $\frac{1}{2}$	3	— $\frac{3}{4}$	77	9
„ 21 ...	25°47 $\frac{1}{2}$	20°57	1	4 $\frac{1}{4}$	16 $\frac{1}{2}$	4°86 $\frac{1}{4}$	3	— $\frac{5}{8}$	77	9
Mar. 7 ...	25°50	20°59	1	4 $\frac{1}{4}$	16 $\frac{3}{8}$	4°85 $\frac{3}{4}$	3	— $\frac{1}{2}$	77	9
„ 21 ...	25°48 $\frac{3}{4}$	20°61	1	4 $\frac{1}{4}$	16 $\frac{1}{8}$	4°85 $\frac{3}{4}$	3	— $\frac{1}{2}$	77	9
Apl. 4 ...	25°42 $\frac{1}{2}$	20°57	1	4 $\frac{3}{16}$	16 $\frac{7}{32}$	4°86 $\frac{1}{4}$	3	— $\frac{1}{4}$	77	9
„ 18 ...	25°42 $\frac{1}{2}$	20°58	1	4 $\frac{5}{8}$	16 $\frac{5}{32}$	4°86 $\frac{3}{4}$	3	— $\frac{3}{8}$	77	9
May 2 ...	25°41 $\frac{1}{4}$	20°57	1	4 $\frac{1}{8}$	16 $\frac{3}{32}$	4°87	3	— $\frac{3}{8}$	77	9
„ 16 ...	25°37 $\frac{1}{2}$	20°57	1	4 $\frac{1}{16}$	16 $\frac{3}{16}$	4°87	3	— $\frac{3}{4}$	77	9
June 6 ...	25°32 $\frac{1}{2}$	20°57	1	4	16 $\frac{3}{32}$	4°87	3	— $\frac{3}{4}$	77	9
„ 20 ...	25°35	20°59	1	4	16 $\frac{1}{8}$	4°87	3	— $\frac{3}{4}$	77	9
July 4 ...	25°35	20°57	1	4 $\frac{1}{16}$	16 $\frac{1}{8}$	4°86	3	1	77	9
„ 18 ...	25°32 $\frac{1}{2}$	20°55	1	4 $\frac{1}{16}$	16 $\frac{1}{8}$	4°86	3	1	77	9
Aug. 1 ...	25°32 $\frac{1}{2}$	20°57	1	4 $\frac{1}{16}$	16 $\frac{1}{4}$	4°85 $\frac{1}{4}$	3	1	77	9
„ 15 ...	25°37 $\frac{1}{2}$	20°60	1	4 $\frac{1}{8}$	16 $\frac{3}{16}$	4°84 $\frac{1}{2}$	3	— $\frac{1}{8}$	77	9
Sept. 5 ...	25°45	20°64	1	4 $\frac{1}{4}$	16 $\frac{1}{4}$	4°84 $\frac{1}{4}$	3	1	77	9
„ 19 ...	25°41 $\frac{1}{4}$	20°67	1	4 $\frac{1}{4}$	16 $\frac{5}{16}$	4°84	3	1 $\frac{1}{4}$	77	9
Oct. 3 ...	25°47 $\frac{1}{2}$	20°72	1	4 $\frac{1}{4}$	16 $\frac{5}{16}$	4°83	3	1 $\frac{3}{8}$	77	9
„ 17 ...	25°41 $\frac{1}{4}$	20°66	1	4 $\frac{1}{4}$	16 $\frac{7}{32}$	4°82	3	1 $\frac{3}{4}$	77	9
Nov. 7 ...	25°42 $\frac{1}{2}$	20°64	1	4 $\frac{9}{16}$	16 $\frac{23}{32}$	4°80 $\frac{1}{2}$	3	2 $\frac{3}{4}$	77	9
„ 21 ...	25°45	20°64	1	4 $\frac{1}{8}$	16 $\frac{7}{8}$	4°81	3	3	77	9
Dec. 5 ...	25°43 $\frac{3}{4}$	20°64	1	4 $\frac{13}{16}$	16 $\frac{7}{8}$	4°80 $\frac{1}{2}$	3	3 $\frac{1}{4}$	77	10
„ 19 ...	25°42 $\frac{1}{2}$	20°64	1	4 $\frac{3}{4}$	16 $\frac{27}{32}$	4°80	3	2 $\frac{1}{2}$	77	10

JOURNAL
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STATISTICS of INSANITY in ENGLAND, with SPECIAL REFERENCE
to its ALLEGED INCREASING PREVALENCE.

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[Read before the Royal Statistical Society, 18th February, 1890.
The President, Dr. T. GRAHAM BALFOUR, F.R.S., in the Chair.]

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At the risk of somewhat discounting any interest which this Society may be inclined to feel in the subject to be brought before them this evening, it is advisable at the outset to admit freely that materials do not at present exist for a thoroughly satisfactory inquiry into the amount, the distribution, and the increase or decrease of prevailing insanity. It is impossible, without considerably improved statistical data, to furnish a sound and trustworthy answer to the question: "Is insanity increasing?" In venturing to bring this subject before this Society, notwithstanding these serious drawbacks, the object has therefore been quite as much to point out the nature of the defects of our statistical data, and how they may be improved, as to prove that, at any rate, conclusions as to increase of insanity, based upon the numbers of registered cases of insanity reported upon during the past thirty years by the Lunacy Commissioners, are entirely untrustworthy.

Apart from the direct interest attaching to the statistics of lunacy, as one of the direst physical calamities to which mankind is liable, it is also important to test the validity of the evidence of the alleged increase of insanity on account of its bearing upon the somewhat widely held theory of progressive physical deterioration. Those pessimists who seek to establish this theory and to minimise the value of the marked reduction in the national death-rate as evidence of real health-progress, not unnaturally claim the alleged increase of insanity and of recorded cancer mortality as evidence of degeneration.

It should moreover be explained that the word insanity is used in this paper as a generic term, signifying all forms of mental unsoundness, and includes all degrees and all varieties of mental unsoundness, which is classed, by the various authorities called upon to deal with the insane, as lunacy, idiocy, or imbecility. In the Census Report for 1881, it was pointed out that no accurate line of demarcation can be drawn between the general conditions indicated by the terms lunatic, idiot, and imbecile; although, generally speaking, the term lunatic is used to describe persons suffering from the more acute forms of mental disease; idiot, to describe those suffering from congenital mental deficiency; and imbecile, to describe persons suffering later in life from chronic dementia. If however these terms could be so interpreted, and if it were possible to secure identically similar use of the terms by those who have to classify the insane, it is beyond doubt that a large proportion of acute cases of lunacy degenerate into cases of chronic imbecility or dementia, and that the classification of the same cases of mental unsoundness would be liable to constant change. It may, for instance, be pointed out that at the time of the last census, in 1881, 3,535, or more than 7 per cent., of the inmates of the county and borough lunatic asylums of England and Wales were described in the enumeration schedules as idiot or imbecile, and not as lunatic. It appears therefore necessary to deal with the aggregate of the mentally unsound as representing the amount of insanity.

Avoiding, as beyond the scope of the present paper, any discussion of the undoubted difficulties that lie in the way of satisfactorily defining the degree of mental unsoundness which constitutes insanity, it must be admitted that these further difficulties have an undeniable and important bearing upon all branches of insanity statistics. So long indeed as our knowledge of the existing amount of insanity depends upon the aggregate of cases certified or registered by a variety of authorities for various purposes, it is inevitable that our statistics, and any conclusions that may be deduced from them, must be founded on more or less

unsatisfactory data. This difficulty of certification has been felt by all writers upon the statistics of insanity, and some have urged that as the inmates of asylums alone are satisfactorily certified as insane, that statistics of insanity should be based upon the asylum population alone. There can be no doubt that the general impression as to the great increase of insanity in the country is due in great measure to the steady and rapid increase in the numbers of our asylum population, without reference to the large and varying proportion of the insane retained in workhouses and kindred institutions, and residing with friends or relations. It is beyond question that the asylum population is constantly being recruited from those cases of insanity detained in workhouses or in charge of relatives; and it is equally beyond doubt that a certain proportion of harmless and chronic cases discharged from asylums find their way back to the workhouses, from which they may in some cases be discharged and placed on out-door relief. Bearing in mind this constant interchange between the insane in asylums, in workhouses, or residing with relations, it seems unquestionable that satisfactory statistics of the amount of existing insanity at different periods can only be based upon the aggregate of these classes, as well as upon the aggregate of the mentally unsound who are variously described as lunatic, idiot, or imbecile.

We now come to one of the most serious of the difficulties which stand in the way of thoroughly trustworthy statistics of insanity: this is the fact that no entirely satisfactory means exist for ascertaining the aggregate number of the insane or mentally unsound in our population.

It is true that we have reports of the Lunacy Commissioners, which are naturally regarded as the only available source of statistics of the aggregate insanity in England and Wales. The Commissioners however can only take cognisance of, and deal in their report with those cases of insanity of which they have official knowledge, and it will not be difficult to prove that no inconsiderable proportion of the existing cases of insanity remain outside the official knowledge of the Commissioners, and is therefore not included in their aggregate of the insane.

In the last issued of these reports, it is stated that on the 1st of January, 1889, the total number of lunatics, idiots, and persons of unsound mind in England and Wales, according to returns furnished to the Commissioners, was 84,340. It appears that of this number, 60,459 were inmates of county and borough asylums, of registered hospitals, of licensed houses, of State asylums, or of the criminal lunatic asylum at Broadmoor. This number therefore represents the duly certified lunatic population residing in establishments specially devoted to the treatment and control of the

insane. In addition to this number, the ordinary workhouses contained 12,012, and the Metropolitan District Asylums for Imbeciles 5,497, insane persons on the first day of 1889; and there were reported to the Commissioners in addition to these, 5,930 insane persons residing with relatives or others in receipt of out-door relief, and 442 private single patients. Thus is made up the aggregate of 84,340 "lunatics, idiots, and persons of unsound mind" reported by various authorities to the Commissioners, and dealt with in their last report.

In accordance with Sections 63 and 64 of the "Lunatic Asylums Act, 1853," the Lunacy Commissioners receive not only periodical returns from the clerk of every asylum relating to the inmates of such asylum, whether pauper or private, but also returns from the clerk of each Board of Guardians, containing "a true and faithful list of all lunatics chargeable to the union or parish," on the 1st day of January in each year. This last mentioned annual return, the form of which is scheduled in the Act, sets out the name, sex, and age of each "lunatic, idiot, or person of unsound mind," chargeable to the common fund, or to the union "or parish in question, with the name of the parish to which chargeable; whether maintained in a county or borough asylum, or in a registered hospital or licensed house, or in the work-house, or in lodgings or boarded out, or residing with relatives." The return also contains other columns for stating whether lunatic or idiot, whether dangerous to himself or others, whether of dirty habits, and also length of time supposed to be insane. It may be presumed that it is mainly from these annual returns that the Commissioners compile their report on the insane population of England and Wales.

It may therefore be safely assumed that as regards the inmates of all asylums, and as regards all other pauper insane persons, whether in workhouses or residing with relatives or others, and in the receipt of out-door relief, the Lunacy Commissioners receive fairly complete and accurate returns. It needs very little consideration, however, to arrive at the conclusion that among the classes ranging upwards from the class that accepts poor-law relief for the support of their harmless insane, there must be fully as large a proportion of mentally insane persons living with relatives and others. These cases, so long as they are not dangerous to themselves or others, or if dangerous are kept under proper control, so long as they are not known to be neglected or ill treated, and so long as they are not the subject of poor-law relief, do not necessarily come within the cognisance of the Lunacy Commissioners, and are therefore excluded from the numbers of the insane dealt with in their reports. There is good reason, as we shall see, to

believe that there thus exists a very considerable aggregate number of insane persons in England and Wales, forming what may be called a reserve of unregistered cases of insanity, from which reserve certain proportions from time to time come under registration, and within the knowledge of the Commissioners, counting as new cases of insanity, and tending to swell the aggregate number of the insane, and the proportion of the registered insane to the population. It is also well known that there have been influences at work in recent years to reduce the amount of this reserve of insanity, and thus to cause the Lunacy Commissioners' figures constantly to approach more nearly the true aggregate numbers of the insane. If these presumptions are well founded, they will to some extent account for the larger and steady increase in the amount of registered insanity in the country. Some corroboration of these conclusions may be derived from the reports upon recent census enumerations.

I.—*Census Statistics of Insanity.*

The first English census report which supplies any information with regard to the insane is that on the enumeration in 1841, the first which took place after the commencement of civil registration. In that year it appears that the number of inmates of lunatic asylums in Great Britain was stated to be 11,218, including 5,465 males and 5,753 females; this number, however, is of no value for the present inquiry, as the report does not afford the means for separating the inmates of the English from those of the Scotch asylums. There is, however, one feature in the statistics of lunacy given in the report for 1841 which is worthy of notice, if only to point out that such statistics are of doubtful value, and should be used with considerable reserve. The recorded occupations of the inmates of asylums in 1841 were classified, and a table is given in the report showing the proportion which the lunatics assigned to the several classes of occupations bore to the total numbers of persons returned as belonging to such classes of occupations. From this table it appears that for 10,000 persons belonging to the several classes, the number of lunatics in asylums in Great Britain in 1841 ranged from 4·5 in the agricultural, and 7·2 in the commercial and manufacturing classes, to 13·7 in the naval, 14·1 in the civil service, 18·3 in the military, and 27·6 in the professional classes, and to 20·1 among "other educated persons following miscellaneous pursuits." There is undoubtedly some ground for believing that the proportion of insanity in the different classes bears some definite relation to the varying degrees of education prevailing in such classes, and it is beyond question that a similar relation exists between education and suicide. As these

above quoted figures from the Census Report for 1841 accord with the general impression, there would naturally be a temptation to accept them as, at any rate, indicative of the proportional prevalence of insanity in 1841 in the several occupational classes. We must, however, remember that the number and proportion of lunatics belonging to the several classes in asylums depend not only upon the aggregate numbers of insane persons belonging severally to those classes, but to the probably widely varying proportions of those aggregate numbers under treatment in asylums. It might very possibly be the case that in 1841 80 per cent. of the aggregate insane belonging to the professional and educated classes were in asylums, whereas not more than 10 or 20 per cent. of the insane belonging to the agricultural and manufacturing classes were under treatment in those institutions. This, however, is only stated hypothetically, in order to show a very possible source of fallacy in the use of the figures from the Census Report for 1841, to which reference has been made.

In the Census Report for 1851 was given information (also relating to Great Britain) concerning the inmates of lunatic asylums, very similar to that given in 1841; namely, the numbers, ages, and previous occupations. Means however were afforded for distinguishing the inmates of English from those of Scotch asylums. We thus learn that the inmates of the English asylums in 1851 were 16,426, of whom 7,783 were males, and 8,643 females.

In the report on the Census for 1861 (which related exclusively to England and Wales) very similar information was given. It is there stated that "at the date of the census there were in the "principal civil lunatic asylums and establishments for the insane "24,345 persons, viz., 11,249 males, and 13,096 females." It is moreover specially pointed out that this number gives no indication of the total amount of the insane, since it not only excludes lunatics in licensed houses, "where a very small number are "received," and patients in military and naval asylums, but all the lunatic paupers in workhouses, as well as those "at large or in "the custody of their relatives.

The Census Act for 1871 for the first time made provision in the householder's schedule for the collection of information relating to mental defects existing in the whole of the population of England and Wales. The schedule used in preceding censuses contained a column headed, "If deaf and dumb, or blind;" the heading of this column was altered in the Schedule for 1871 to, "If (1) deaf and dumb; (2) blind; (3) imbecile or idiot; " (4) lunatic." The householder was instructed to "write the "respective infirmities against the name of the afflicted person; "and if so afflicted from birth, add '*from birth.*'" This was the

first attempt to ascertain by means of the census the aggregate number of the mentally afflicted or insane in the enumerated population. The result of this enumeration of the insane in 1871 was that 29,452 persons (including 14,728 males and 14,724 females) were described as idiot or imbecile; and 39,567 (including 18,146 males and 21,421 females) as lunatic. Ignoring for present purposes the somewhat arbitrary distinction between those returned as idiot or imbecile, and those described as lunatic, the total number of persons returned in the householder's schedules as insane (including all forms of mental unsoundness) was 69,019, including 32,874 males and 36,145 females. Turning to the Reports of the Lunacy Commissioners, it appears that the aggregate number of the insane in England and Wales on the 1st day of January, 1871, is stated to be 56,755, of whom 26,009 were males, and 30,746 were females. There are the best grounds for believing that the census figures purporting to show the number of persons suffering from the various forms of infirmity concerning which information is asked in the householder's schedule, very considerably under-state the true numbers. The census figures show us however that there were at any rate no fewer than 12,264 cases of insanity existing at the time of the census in 1871 in excess of the number known to the Lunacy Commissioners and reported on by them.

In other words, the Commissioners were officially unaware of nearly 18 per cent. of the cases of insanity admitted by occupying householders to be existing at the date of the census. It may be noted in passing that the deficiency in the Lunacy Commissioners' numbers was 21 per cent. among the male insane, and 15 per cent. among the female insane.

Before analysing this deficiency in the Lunacy Commissioners' numbers in greater detail, it will be well to pass on to notice the results of the last census in 1881, as regards the enumeration of the insane. The householder's schedule in 1881 was practically identical with that used in 1871, and excepting a well grounded impression that householder's schedules were more accurately filled up in 1881 than at any previous census, there appears to be no sufficient reason why the aggregate number of persons returned as insane (lunatic, idiot, or imbecile) in 1881, should not be fairly comparable with the number returned at the previous census in 1871. The number of insane persons returned at the census in 1881 was 84,503, including 39,789 males and 44,714 females; while the numbers reported by the Lunacy Commissioners as known to them on the 1st of January in that year were 73,113, including 32,973 males and 40,140 females. It would thus appear that the Lunacy Commissioners had no knowledge of 11,390, or

13·5 per cent. of the aggregate number of cases of insanity returned in the householder's schedules at the census in 1881; the deficiency being 17·1 per cent. among the male insane, and 10·2 per cent. among the female insane. We may therefore assume that the proportion of existing cases of insanity unknown to the Lunacy Commissioners had declined from 17·8 per cent. in 1871, to 13·5 per cent. in 1881; and further that the proportion of the cases unknown to the Commissioners was in 1881, as it was in 1871, considerably greater among males than among females.

TABLE A.—*Aggregate Numbers of the Insane enumerated at the Censuses in 1871 and 1881, and those Reported to the Lunacy Commissioners on 1st January in those Years.*

Years.	Persons.		Males.		Females.		Deficiency per Cent. of Lunacy Commissioners' Numbers.		
	Census.	Lunacy Commis- sioners.	Census.	Lunacy Commis- sioners.	Census.	Lunacy Commis- sioners.	Persons.	Males.	Females.
1871	69,019	56,755	32,874	26,009	36,145	30,746	17·7	20·5	14·9
1881	84,503	73,113	39,789	32,973	44,714	40,140	13·5	17·1	10·2

Assuming, therefore, that the census numbers fairly represent the aggregate cases of insanity in England and Wales (whereas in all probability these numbers not inconsiderably under-state the true figures), there appear to have existed 12,264 cases of insanity in 1871, and 11,390 cases in 1881 which were unknown to the Commissioners, acting undoubtedly as a reserve from which was probably drawn from time to time, through increasing accuracy of registration, a pretty constant supply of so-called new cases (really only newly registered cases) to swell the aggregate total of recorded cases of insanity, and to increase their proportion to population. Judging by the results of this enumeration of the insane in 1871 and 1881, as well as from other facts, it seems fair to assume that a constantly increasing proportion of the total cases of insanity is from year to year reported to the Commissioners, but that the yearly increase of cases dealt with in their reports cannot be safely accepted as in any way representing the increase of insanity in the country, even if an increase be actually taking place. While, therefore, the lunacy reports under-state the amount of insanity and its proportion to population, they undoubtedly tend to over-state the rate of increase of insanity.

Before leaving this branch of the subject, it may be well to examine in greater detail the census figures relating to the insane in 1881, with a view, if possible, to throw some light upon the

class of cases which escape the knowledge of the Commissioners, and their distribution throughout the country.

According to the Lunacy Commissioners' reports, the number of insane inmates of county asylums, registered hospitals, metropolitan and provincial licensed houses, and State and criminal asylums on the 1st of January, 1881, was 49,727, and the number enumerated as inmates of all classes of asylums for the insane on the census day in April of the same year was 49,194, or fewer by 533 than the number so returned to the Lunacy Commissioners. This deficiency in the census numbers of inmates of asylums was probably due to a certain number of the smaller asylums and licensed houses not being so described in the schedules, and therefore not being recognised as such by the abstracting clerk, in which cases the insane inmates would necessarily have been treated as not residing in asylums. The Commissioners' report for 1881 shows 12,093 insane inmates of ordinary workhouses, and 4,718 inmates of the metropolitan district asylums, together 16,811, as inmates of workhouses. The number of inmates of workhouses described in the census numeration books as insane (that is as lunatic, idiot, or imbecile) was 16,230, or fewer by about 600 than those reported as insane to the Commissioners in the lists furnished to them by the clerks to the guardians three months previous to the census day. It follows, therefore, and this has been tested by careful comparison between the union number of residents in workhouses published by the Commissioners, and the special census enumeration books supplied by the masters of workhouses, that in a certain number of cases in-door paupers who were included in the list of the insane furnished to the Commissioners, were not so described in the census schedules. The effect of this omission on the part of the workhouse authorities, is to under-state to this extent the total number of the insane as derived from the census report.

In addition to the 66,538 insane persons reported to the Commissioners as located on the 1st of January, 1881, in asylums and workhouses, there were 6,575 reported as "residing with relatives and others," making up the gross total of 73,113 dealt with by the Commissioners in their report for that year. It is naturally in this class of the insane, those not treated in asylums or workhouses, that the numbers of the Commissioners show so large a deficiency. The census schedules in April, 1881, showed no fewer than 19,079 insane persons not residing in asylums or workhouses, instead of the 6,575 known to and reported upon by the Commissioners. Thus in the aggregate, 12,504 insane persons were enumerated at the census over and above the number known to and reported upon by the Commissioners. This number, however, does not fully represent the deficiency of the Commissioners' numbers; about 600

may be added for those before-mentioned insane inmates of work-houses not so returned in the census schedules, and it is beyond doubt that the census numbers, although so far exceeding the Commissioners' numbers, under-state the true number of the insane,¹ although it would be mere guesswork to attempt to estimate the extent of this under-statement. We may safely assume that householders, when called upon to fill up their census schedules, would more probably omit to return cases of mental deficiency, than to err on the side of returning cases which should not be so classed. There is also good ground for believing that, speaking generally, the census figures have, with the increased diffusion of education and of intelligence, steadily acquired greater accuracy at each succeeding enumeration. We need, therefore, show little hesitation in accepting the census figures for 1871 and 1881 as much more nearly representing the true aggregate numbers of the insane in England and Wales in those two years, than the numbers reported to the Lunacy Commissioners as existing at the beginning of each of those years. Adopting these figures, it may be calculated that in 1871 the insane were in the proportion of at least 3,039 per million of the population; and that in 1881 the proportion had increased to 3,253 per million. These figures show an increase of 7 per cent. in the rate of existing insanity in the ten years; whereas the Lunacy Commissioners' figures show an increase of 12·2 per cent. in the same ten years. This difference in the rate of increase is doubtlessly due to more complete registration by the Lunacy Commissioners, and to the reduction in the proportion of unregistered cases shown by the census figures. Whether the apparent increase of 7 per cent. in the rate of existing insanity in 1881 (judged by the census figures) represents a real increase of that proportion, depends to some extent upon whether in consequence of improved accuracy of the information in the householder's schedules, a larger proportion of the actually existing cases were enumerated in 1881 than in 1871. In the recently issued report of the Royal Commission on the blind, the deaf, and dumb, &c., the Commissioners express the opinion that the enumeration of infirmities was "less inaccurate in 1881 than on previous occasions." If this be the case with regard to insanity, part of the increased proportion of enumerated cases to population in 1881, compared with the proportion in 1871, may be attributed to more complete enumeration rather than to the increase of insanity. Another part of the increase may be due to accumulation of cases arising from reduced mortality of the

¹ With reference to this statement, see "Census Report," 1881, vol. iv, p. 68.

insane. This is, however, anticipating a subject which will have to be discussed presently.

Before quitting the subject of this deficiency in the numbers of the insane dealt with in the reports of the Lunacy Commissioners, it will be well to say something of the distribution of the 19,079 enumerated cases of insanity not residing in asylums or workhouses, of which only 6,575 were reported to the Lunacy Commissioners. It may be assumed that nearly all the 6,575 insane persons residing with relatives, &c., and reported to the Commissioners, were subjects of out-door relief, and it may also be as safely assumed that few, if any, of 12,504 cases unknown to the Commissioners were in receipt of such relief. It may be stated that of these 19,079 cases of insanity now under notice, 2,360 were so returned in the census schedules as to be tabulated in the census report as lunatic, while the remaining 16,719 were, in accordance with their description, tabulated as idiot or imbecile. If the county distribution of the 19,079 census cases of insanity not in asylums or workhouses be examined, very remarkable variations in their proportions are shown, whether measured by population, by total pauper cases known to the Commissioners, or by the numbers in asylums and workhouses. In the whole of England and Wales the proportion of these census cases to the total number of pauper cases reported to the Commissioners was 20·1 per cent. In the three metropolitan counties of Middlesex, Surrey, and Kent, this proportion was equal to 15·6 per cent. ; and in England and Wales, exclusive of these metropolitan counties, it was 21·7 per cent. In the several English counties the lowest percentages of unreported cases of insanity were 4·5 in Warwickshire, 8·3 in Herefordshire, 9·1 in Worcestershire, 10·7 in Oxfordshire, 10·9 in Bedfordshire, and 11·4 in Nottinghamshire. The percentages of unreported cases ranged upwards in the other counties to 30·0 in the West Riding of Yorkshire and in Shropshire, 30·0 in Huntingdonshire, 32·0 in Cornwall, 32·1 in Westmorland, 32·2 in Lincolnshire, 34·4 in Suffolk, and 40·1 in Staffordshire. Thus the proportion of cases of existing insanity, not reported to the Lunacy Commissioners, to the total known cases of pauper lunacy was (to mention the extreme cases at the top and bottom of the list, which happen to be neighbouring counties) nearly ten times as great in Staffordshire as it was in Warwickshire. The true explanation of this remarkable contrast, to say nothing of the generally wide variations between these percentages, would require more careful investigation than the time and space available for this paper would permit. It is nevertheless a subject which demands the most serious consideration of the Lunacy Commissioners, as well as of the local authorities of the various counties charged with the care of the insane. It is difficult to believe that

the explanation of this wide difference between these two counties is really due to Staffordshire being able to maintain so much larger a proportion of its insane population than Warwickshire without pauper relief, and yet in a condition free from danger to themselves or to others. Speaking generally, those counties in which the percentage of unreported cases of insanity is small, have a lower rate of reported pauper insanity than those counties in which the percentage of unreported cases is largest, but this is by no means invariably the case.

II.—*The Lunacy Commissioners' Statistics bearing on the Prevalence of Insanity.*

Although no trustworthy conclusions as to the actual amount of insanity prevailing in the country, or of its increasing or decreasing prevalence, can be derived from the returns published by the Lunacy Commissioners, it will be desirable briefly to discuss some of the figures contained in their reports, which are mainly responsible for the general impression existing in the public mind that the prevalence of insanity is steadily increasing. It is moreover desirable to utilise such light as these figures throw upon the problem under discussion. Table II of the last published report shows that the aggregate number of "lunatics, idiots, and "persons of unsound mind" reported to the Commissioners increased from 36,732 at the beginning of 1859, to 84,340 on the 1st January, 1889. Measured by the population, the proportion increased from 1,867 per million in 1859, to 2,907 per million in 1889. Thus, after due allowance for increase of population, the proportion of existing insanity showed an increase of 55·7 per cent. in the thirty years. It may be pointed out in passing, that during this period the proportion of pauper insanity, measured by the same standard, increased 63·5 per cent., while the increase of private lunatics was only 15·6 per cent., and the proportion of criminal lunatics had actually declined. To revert to the increase in the proportion of the aggregate insane to population, the table referred to shows, with scarcely an exception, a constant increase from year to year during the thirty-one years, amounting, as we have seen, to 55·7 per cent. in the whole period. It is needless here to repeat the arguments which lead to the conclusion that at any rate the bulk of this increase is due to constantly increasing completeness of registration, and to accumulation caused by reduction in the death-rate of the insane. The force of such arguments have in recent years been admitted by the Lunacy Commissioners themselves, although their reports have not done as much as they might have done to elucidate this important problem. If it be true that the proportion of the

total insane in the country reported to the Commissioners by various authorities, is steadily increasing, and that the reserve of unregistered cases is constantly decreasing, we ought to find that the rate of increase of the insane dealt with by the Commissioners is a decreasing rate of increase. It is therefore most satisfactory to find that such is the case. If we divide the thirty years 1859-88 into six periods of five years, ascertain the mean annual proportion of the total insane to a million of the population in each of those periods, and calculate the increase per cent. in each quinquennium, the following results are obtained:—

Quinquennial Periods.	Mean Annual Rate per Million of Population.	Increase per Cent. between the Quinquennial Periods.
1859-63	1,971	} 12·9
1864-68	2,226	
1869-73	2,486	} 11·7
1874-78	2,673	
1879-83	2,806	} 7·6
1884-88	2,884	
		} 5·0
		} 2·8

Thus the mean annual proportion of registered lunacy to population in the five years 1864-68, compared with that in the preceding five years, 1859-63, showed an increase of 12·9 per cent., whereas the rate of increase in succeeding five-year periods, compared with the preceding quinquennium, successively declined to 11·7, 7·6, 5·0, and to 2·8 per cent. in the five years 1884-88. This marked and steady decline in the rate of increase of registered cases appears to be inconsistent with the supposed real increase of lunacy, whereas it is entirely consistent with the theory that the increase in the proportion of registered cases to population is mainly due to improved and more complete registration, which is constantly bringing within the knowledge of the Commissioners a larger proportion of the total existing cases of insanity, and thus reducing the reserve of unregistered cases.

If the proportional rates of registered cases of insanity to population among males and females during the same period of thirty years, as given in Table II of the last report of the Lunacy Commissioners, be dealt with in a similar way, the results (which are given in the following table) show that this decline in the rate of increase in successive five-year periods has been somewhat more marked among males than among females. Thus, among males, the rate of increase, which was 13·2 per cent. between 1859-63 and

1864-68, declined to 2·7 per cent. between 1879-83 and 1884-88; and, among females, the proportional increase declined from 12·6 per cent. between 1859-63 and 1864-68, to 2·8 per cent. between 1879-83 and 1884-88:—

Quinquennial Periods.	Mean Annual Proportion per Million of Population.		Increase per Cent. between the Quinquennial Period.	
	Males.	Females.	Males.	Females.
1859-63.....	1,840	2,097	} 13·2	12·6
1864-68.....	2,083	2,362		
1869-73....	2,338	2,626	} 12·2	11·2
1874-78.....	2,490	2,848		
1879-83.....	2,603	2,969	} 6·5	8·5
1884-88.....	2,673	3,083		
			} 4·5	5·3
			} 2·7	2·8

It may be noted that whereas in the early days of the Lunacy Commission the rate of increase of insanity to population was greater among males than among females, in recent years the rate of increase among females has very slightly exceeded that among males. This is very probably due in great measure to the effect of true accumulation, that is to the greater prolongation of life among the female than among the male insane.

The Lunacy Commissioners also give in Table III the ratio to population of admissions to all classes of asylums, and into single charge, in each of the years 1869-88, excluding transfers and admissions to idiot establishments. If these admissions to asylums could be accepted as representing new cases of insanity, the table in question would undoubtedly have considerable value, and would afford evidence of the ratio of occurring cases of insanity during the twenty years. Knowing, however, the large reserve of cases of insanity existing in workhouses, and residing with relatives, or others (known or unknown to the Commissioners), there appears to be no possibility of determining what proportion of the admissions dealt with in this table are really new cases, and what proportion are cases previously existing in the reserve. Although, for this reason, these figures appear to be open to doubt, they should not be left unnoticed. The mean annual proportion of these admissions per million of population in the five years 1869-73 was 465; in each of the succeeding periods 1874-78, and 1879-83, the proportion was 521, while in the five years 1884-88, it fell to 504 per million. Thus, though the admissions showed a considerable increase in the five years 1874-78, compared with the preceding

five-year period, no increase has taken place in the last ten years, and the proportion of admissions in the latest quinquennium showed a decline.

The lunacy reports also contain special statistics concerning the admissions of patients (including their ages) suffering from "first attacks" into asylums and to single charge during the ten years 1878-87, transfers and cases of congenital idiocy being excluded. Dr. Hack Tuke, in his valuable paper on "The Alleged Increase of Insanity," read at the Brighton Meeting of the British Medical Association in 1886, naturally attaches much importance to this information as evidence of "occurring lunacy;" and on the hypothesis that these statistics are fairly trustworthy, their important bearing upon the problem of the alleged increase of lunacy cannot be questioned. The average annual rate of these "first attacks" to a million of the population was 348 in both the five-year periods 1878-82 and 1883-87, appearing to show an absolutely stationary rate of occurring lunacy during the past ten years.

III.—*Distribution of Registered Insanity, and Rates of Pauper Insanity, in the several Counties of England and Wales in 1889.*

Whatever may be the defects of the statistics published by the Lunacy Commissioners, as a means for arriving at sound conclusions on the disputed question of the increase of insanity, the reports of the Commissioners contain the only available information concerning the geographical distribution of insanity and its relative increase in the several counties. Whereas there seems little doubt that the census figures give a better, though still inadequate, measure of the aggregate amount of insanity in the country, they are useless for studying the distribution of mental unsoundness on account of the disturbing element of the asylums, which are far from invariably situated in the counties to which they belong, and often receive inmates from more than one county. For distribution purposes the statistics of pauper lunacy can alone be turned to account, for it is impossible to distribute geographically the private cases, as the situation of the asylum in which they may happen to be resident has no necessary connection with the locality in which the case originated and to which it may be said to belong. Since, however, the pauper lunatics represent more than 89 per cent. of the aggregate number of the insane reported upon by the Lunacy Commissioners, distribution statistics based upon the pauper cases may be accepted as trustworthy and fairly representative of the general distribution of insanity. The last report of the Lunacy Commissioners gives in Table XIII the total numbers of pauper lunatics, idiots and persons of unsound mind in the several registration counties of England

and Wales, on the first day of each of the years 1871 and 1889. Before, however, examining these figures with a view to calculate the relative increase of registered insanity during these eighteen years in the several counties, it will be desirable to notice briefly a few of the main points of interest in the varying rates of pauper insanity in the different counties.

The rate of pauper insanity in the whole of England and Wales in 1889 was 2·60 per 1,000 of the estimated population in the middle of the year. The rate in the metropolis (registration London, and practically the area of the administrative county of London) was 3·83 per 1,000, while the highest rates in the other counties were 3·14 in Norfolk, 3·16 in Cambridge, 3·20 in Dorsetshire, 3·52 in Gloucestershire, 3·64 in Oxfordshire, 3·66 in Wiltshire, and 4·59 in Herefordshire. The lowest county rates in 1889 were 1·52 in Durham, 1·73 in Derby, 1·79 in Yorkshire, 1·84 in the extra metropolitan portion of Middlesex, and 1·97 in Lincolnshire. Thus the rates of insanity in Oxfordshire, Wiltshire, London, and Herefordshire, in 1889, were fully double those that prevailed in Durham, Derby, Yorkshire, and the extra-metropolitan portion of Middlesex. It is somewhat difficult to draw sound and definite conclusions from these county rates as to the controlling influence of the varying insanity rates. It is true that the metropolitan rate exceeds the mean rate in England and Wales by nearly 50 per cent., but on the other hand (see Table J in the Appendix), all the counties showing the highest rates are essentially rural in character, while the lowest rates are found for the most part in counties which have a rapidly increasing urban population. The fact however must be admitted that no statistics appear to exist which would enable satisfactory conclusions to be drawn as to the relative incidence of insanity upon urban and rural populations. Town populations are to a large extent made up of young and selected healthy lives drawn from the rural districts, and there is good ground for asserting that no inconsiderable proportion of the cases of illness, mental and physical, occurring among these town immigrants, drift back to the rural districts to be nursed, and in certain proportions to terminate fatally. There is no doubt that all urban death-rates are considerably under-stated from this cause, and it has been pointed out, as an example of this influence, that the death-rate from phthisis among young women aged between 20 and 35 is lower in London than it is in several of the rural counties which supply the largest proportions of the domestic servants who find occupation in the metropolis. Owing to this disturbing influence, the number of the pauper insane dependent upon the rates of municipal boroughs is probably below the true number of cases, resulting from residence in such boroughs. Moreover, as has

been pointed out, asylum cases constitute only a part of the total cases of insanity, and the pauper cases in workhouses, or residing with relatives or others, are only given for poor law unions, which in but few instances are co-extensive with the boundaries of urban sanitary districts. There are indeed at present almost insurmountable difficulties in the way of calculating trustworthy rates of insanity for urban populations.

IV.—*Increase of the Rates of Pauper Insanity in Counties in the Eighteen Years 1871-89.*

The table in the last lunacy report showing the number of pauper insane persons in the several registration counties at the beginning of 1871 and of 1889, to which reference has already been made, is however only useful as a basis for calculation, as neither the actual numerical increase, nor the "average annual increase in the eighteen years," which is given in the Commissioners' table, is of any value as a measure of the increase (even of registered insanity) in the several counties during this period, unless account be taken of the varying changes of population. For the purposes of this paper the proportion of pauper insanity in each of the English counties and in North and South Wales, in 1871 and in 1889, has therefore been calculated in order to obtain from these two series of rates the true rate of increase of registered pauper lunacy in each county during the period of eighteen years. The results of this calculation are given in Table J in the Appendix.

While the variations in the calculated rates of increase of registered pauper insanity in the several counties must not, for reasons already explained, be accepted as indicating the true ratio of increase of insanity, they are undoubtedly useful in throwing a suggestive side-light upon the intricate problem under consideration in this paper.

Measured by the estimated population, the proportion of recorded pauper insanity in England and Wales rose from 223 per 100,000 in 1871 to 260 in 1889, thus showing an increase of 16.6 per cent. after due allowance for increase of population. It has been shown that the increase of cases reported to the Lunacy Commissioners affords no trustworthy evidence of real increase of insanity. It has also been shown that the proportion of the reserve of unreported to the reported cases varies very widely in the several counties. These facts notwithstanding, it seems unwise entirely to ignore figures, in place of which no other statistics could be substituted, which afford the means of judging approximately of the relative increase of insanity in counties during so long a period as eighteen years.

In the metropolis (registration London) the calculated increase

of pauper insanity in the eighteen years 1871-89 was 35·0 per cent., and more than double the mean increase in the whole of England and Wales. Among the various counties an actual decline of the insanity rate occurred during the eighteen years in Leicestershire, Derbyshire, Berkshire, Middlesex (extra-metropolitan), Lincolnshire, Cumberland, and Northamptonshire. The rate was stationary in Sussex, while the increase ranged upwards in the other counties to 28·1 per cent. in Huntingdonshire, 28·7 in Devonshire, 35·4 in Herefordshire, 36·2 in Cambridgeshire, and 69·0 in Cornwall. With reference to these exceptional rates of increase, it should be pointed out that in nearly all the counties showing a decline or a low rate of increase of insanity in the eighteen years, the population had very largely increased during that period by immigration; whereas in each of the counties, without exception, that showed the highest rates of increase of insanity, the population was either stationary or had largely declined by emigration. It is obvious that the influx of healthy immigrants must reduce the proportion borne by the insane to the total population, while on the other hand the effect upon the county from which the migrants come is to raise the proportion which the insane bear to the total population, even if the insanity rate of the county is not further unduly raised through the return of a certain proportion of its migrants with health or mental condition destroyed by the artificial excitement and high pressure or excesses of various kinds incident to residence and work in towns. With regard to Wales it may be noted that the rate of increase of reported insanity in the eighteen years was below the mean rate in England and Wales, and was considerably smaller in North Wales than in South Wales; the reserve of unreported cases being larger in North than in South Wales.

It should be pointed out, however, that the proportion of the aggregate insane under treatment in Wales has shown a far smaller increase than is the case in England, and that the comparatively small increase of the insanity rate in Wales may be partly due to the rate of mortality among the insane in workhouses and residing with relatives very probably exceeding the rate that prevails in county asylums.

Before quitting this part of the subject it will be worth while to refer very briefly to the relative increase of recorded pauper insanity during these eighteen years in the two sexes, although the rates of increase or decrease of insanity among males and females do not differ materially from the rates among persons of both sexes. In the whole of England and Wales the recorded increase was 17·6 per cent. among males and 16·2 per cent. among females. In the metropolis the recorded increase was 40·5 per cent. among

males and 30.9 per cent. among females. Among the exceptional features of the changes in the rates of insanity in the two sexes, the following may be noticed. Male insanity had declined in Sussex, Berkshire, Northamptonshire, and Essex, while the proportion of female insanity in these counties had increased. On the other hand the female rate in the extra-metropolitan portion of Middlesex had declined, whereas the male rate had increased. This was probably due to the very large immigration of young domestic servants to this area, which had the effect of reducing the proportion of the female insane to the total female population. That migration is the true explanation of some of these apparent anomalies between the rates of increase in different counties is corroborated by the fact that in counties (as in mining counties) where the immigration more largely consists of males, we find that the calculated rate of increase of insanity is larger among females than among males; whereas in those counties in which the immigration of females is proportionally larger than that of males, the opposite is the case, namely, the increase of insanity is larger among males than among females.

V.—*Accumulation of the Insane.*

The assertion that the undoubtedly constant increase in the aggregate number of known cases of insanity in England and Wales in recent years is due to the "accumulation" of cases rather than to the increase of new cases, is undoubtedly justified by such evidence as is available for the formation of an opinion thereon. It is necessary however to understand what is meant by the term accumulation, as applied to cases of insanity, before considering the evidence which justifies the assertion of its effect upon the aggregate of the insane. The term has been loosely used to represent the excess of admissions to asylums over the discharges, including recoveries and deaths. For instance, Dr. Mortimer Granville, in an article in the "Nineteenth Century," (March, 1879), stated that 71.87 per cent. of the increment "is directly due to the accumulation of cases, that is, to the fact that discharge is not so rapid as admission." The word accumulation is thus used merely as a synonym for the increase of the asylum population by excess of admissions over discharges, and its use in this sense does not bring us any nearer an explanation of the cause of the increase. Moreover in the article referred to, the attempt was made to solve the problem "Is insanity increasing?" by dealing with the asylum population without reference to the insane in workhouses, or those residing with relatives. The increase of the asylum population is due to such various causes,

other than the occurrence of new cases of insanity, that the problem can never be solved without taking account of the aggregate amount of the insane, or the nearest possible approach to that number. Dr. Granville in his "Care and Cure of the "Insane," admitted that "the means for a final judgment on that "subject (the vexed question whether insanity is increasing) do "not exist, and without data of sufficient accuracy it is impossible "to proceed one step in such an inquiry without danger of being "led astray." He further pointed out that "if the inmates of "asylums live longer than they did years ago, if a larger proportion of the cases under treatment neither recover nor die, but "pass into a condition of chronic dementia, the accumulation of "cases must produce an increase of the resident population of "asylums. I believe both these causes of increase are in operation. "The average age at death has been slightly raised, and is "increasing." If Dr. Granville is correct in his opinion that in recent years there has been a reduction both in the rate of mortality and in the rate of recovery, accumulation of cases must have taken place which cannot be attributed to an increase in the proportion of the population becoming insane. The statistics of recovery are so unsatisfactory, and are so vitiated by the disturbing element of relapses, that no useful conclusions can be based upon them, although it necessarily follows that a real reduction in the rate of recovery would cause true accumulation of existing cases. With regard to accumulation due to a reduction in the death-rate of the insane, statistics of more trustworthy character exist, and the amount and effect of such accumulation upon the aggregate of existing cases of insanity call for careful consideration. It is proposed first to consider what evidence of this accumulation is afforded by the recorded age-distribution of the insane; and secondly, to examine available statistics of the rates of mortality among the insane, and to estimate the effect any changes that may have taken place in these rates of mortality have had upon the number of existing cases of insanity.

Dr. William Farr, a late distinguished President of this Society, in his well-known paper read in 1841, entitled, "Report "on the Mortality of Lunatics," said, "There may be ten times as "many lunatics in civilised as in barbarous countries and times, "not because the tendency to insanity is greater, but because "the lunatics live ten times as many months or years. The "tendency to insanity is expressed by the proportion that become "insane."

Dr. Hack Tuke, moreover, in the paper to which reference has already been made, expressed his deliberate opinion that "so far "as statistics teach us anything, they fail to show the slightest

“increase in occurring insanity in this country since 1st January, 1878.” This opinion he based partly on the “vast accumulation” due to the declining death-rate in asylums, and partly on the fact that the rate of admissions (excluding transfers) especially of “first attacks” has shown no increase in recent years.

It is most seriously to be regretted that the Lunacy Commissioners have practically omitted the element of age from their statistics of lunacy. No information is given of the ages of the living insane, or of the ages at which their deaths take place. In accordance with the Lunacy Acts, however, information as to the ages of the living insane is furnished to the Commissioners year by year by the various authorities charged with this duty. It is no exaggeration to say that this information is absolutely necessary to the satisfactory study of lunacy statistics, with a view to sound conclusions as to its increasing or decreasing prevalence, and to the true effect of insanity upon mortality. A knowledge of the age-distribution of the insane in a series of years is necessary to afford the means for throwing light upon the question of accumulation. The ages of new insanity patients, and the rates of mortality of the insane at different periods of life, in a series of years, are also essential for the study of different aspects of the subject of lunacy statistics. The importance of more complete statistics, with especial reference to the question of age, has been pressed upon the notice of the Lunacy Commissioners very frequently during the last twenty years by the medical press, and by most of those who have studied and written on the subject, but so far with only partial success.

No information as to the ages of the insane population being given in the lunacy reports, it has been necessary to utilise such statistics on the subject as have from time to time been published in the census reports.

VI.—*Age-distribution of the Inmates of Lunatic Asylums.*

The census reports for 1851, 1861, 1871, and 1881, afford the means for calculating the age-distribution of insane persons enumerated in lunatic asylums in each of those years. The enumerated inmates of asylums, described as lunatic, increased from 16,426 in 1851, to 45,192 in 1881; those numbers were equal to 916 per million of the population in 1851, and to 1,740 per million in 1881. The age-distribution of these asylum inmates is shown in the following table. Of 1,000 inmates at all ages, there were 9 aged under 15 years in 1851, whereas at succeeding enumerations the proportion at these ages steadily declined to 1 per 1,000 in 1881. The proportion aged between 15 and 25 years, which was

TABLE B.—*Proportional Age-distribution of the enumerated Inmates of Lunatic Asylums, at the Four Censuses in 1851, 1861, 1871, and 1881.*

Ages.	Proportion per 1,000 at all Ages.											
	Persons.				Males.				Females.			
	1851.	1861.	1871.	1881.	1851.	1861.	1871.	1881.	1851.	1861.	1871.	1881.
All ages.....	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000
0—15	9	6	3	1	13	8	5	2	6	4	2	1
15—25	75	78	67	55	86	85	71	60	66	72	65	52
25—45	465	458	438	429	497	490	464	462	436	431	414	399
45—65	368	365	382	398	333	338	364	376	399	388	397	417
65 and upwards	83	93	110	117	71	79	96	100	93	105	122	131

75 and 78 in 1851 and 1861, declined to 67 and 55 in 1871 and 1881. At each enumeration the proportion of lunatics aged between 25 and 45 years was larger than at any other of the five age-periods shown in the table; the proportion at these ages declined steadily from 465 per 1,000 in 1851, to 429 in 1881. Above the age of 45 years, however, the proportion has considerably increased since 1851. The proportion between 45 and 65 years, which was 368 and 365 in 1851 and 1861, rose to 382 in 1871, and 398 in 1881; and the proportion aged upwards of 65 years steadily increased from 83 in 1851, to 117 in 1881. These figures clearly show a steady increase in the proportions of inmates at the later age-periods, and necessarily imply the increased mean age of the inmates. If we measure the asylum inmates at the several censuses by the enumerated population of England and Wales at each of the five age-periods, and compare the rates in 1851 with those in 1881, we find that the proportion to population under the age of 15 years in 1881, was 72 per cent. below that in 1851, whereas the proportion showed an increase of 43 per cent. between 15 and 25 years, of 80 per cent. between 25 and 45, of 102 per cent. between 45 and 65, and of no less than 173 per cent. at the age-period 65 years and upwards. Thus a very similar result is obtained by both these methods for measuring the changes in the age-distribution of the lunatic inmates of asylums between 1851 and 1881. There can, therefore, be no doubt, that in the thirty years there was a steady increase in the proportion of the inmates of asylums living at ages above 45 years. Unless we were to assume that insanity now attacks people at a later period of life than was formerly the case (in support of which hypothesis no conclusive evidence yet exists), no other explanation of this increased mean age of the inmates of asylums suggests itself than increased longevity due to the decline of mortality. The changes

in the age-distribution of the male inmates of asylums enumerated at the four censuses in 1851-81, did not differ materially from the changes among the female inmates, and need not be compared in detail, as the proportions are given in the foregoing table. It will be sufficient to note that the signs of accumulation, that is of increased proportions at the advanced ages in 1881, compared with 1851, were more marked among males than among females, although, as might be expected, the mean age of female asylum patients in 1881 still very considerably exceeded that of male inmates, as it did in 1851. For instance, in 1881 the proportion of male inmates aged over 45 years was 476 per 1,000 at all ages, while of the female inmates the proportion was 548 per 1,000.

The Commissioners have, as has been mentioned, given the ages of patients admitted to asylums in recent years, with their proportions to the population living in eight age-periods. These figures, however, have only been published in the individual reports, and unfortunately the rates for the first five years (1878-82) were calculated on the enumerated population in 1871, and those for the following five years (1883-87) on the 1881 numbers, which destroys the value of the series of rates for comparative purposes. It may be noted, however, that the rates of admissions increase steadily at successive age-periods, and reach their maximum in the 35—45 period. Moreover it should be pointed out that while the rates of admissions during the ten years showed a decline at each of the earlier age-periods, they showed a decided increase at the latter ages. Thus it appears possible that the increased mean age of the inmates of asylums may be partly due to changes in the ages of the patients on admission, as well as to their increased probability of living owing to reduced mortality.

The numbers of mentally unsound persons in England and Wales, including those described as lunatic, idiot, or imbecile, were only enumerated in 1871 and 1881. They amounted, as has been before stated, to 60,019 in 1871, and to 84,503 in 1881. During this intercensal period of ten years, changes of the age proportions of the insane population took place very similar to those we have been noticing in the age-distribution of the asylum inmates between 1851 and 1881. The proportion per 1,000 under the age of 15 years declined from 69 in 1871 to 65 in 1881; the proportion between 15 and 25 years declined from 139 to 125; and between 25 and 45 the proportion declined from 386 to 381 per 1,000. On the other hand, the proportion of the insane aged 45—65 years increased from 298 to 316 per 1,000; and of those aged upwards of 65 years from 108 in 1871 to 113 in 1881. Measured by the ratio of insanity to population living at the various age-periods at the time of the two censuses, the increase of the insane at all ages

in the ten years was, as has been shown, 7 per cent. Under the age of 15 years there was a decline in the rate of insanity less than 1 per cent., and between 15 and 25 years a decline of 6 per cent.; whereas the increase in the rate of insanity was 6 per cent. between 25 and 45 years, 17 per cent. between 45 and 65 years, and 15 per cent. among persons aged upwards of 65 years. It is worthy of note, although it is impossible to discuss the fact here, that notwithstanding the undoubted influence of insanity upon the death-rate, and although asylum statistics seem to show that the incidence of "first attacks" is considerably greatest in the 35—45 age-period, the proportion of the insane in the population increases steadily in each successive age-period. It is thus shown in the accompanying table, that at the time of the last census in 1881,

TABLE C.—*Proportional Age Distribution of Persons enumerated in England and Wales as Insane (Lunatic, Idiot, or Imbecile) at the Censuses in 1871 and 1881; Rate of Insanity per 1,000 of Total Population at each Age-Period, and Increase or Decrease per Cent. of the Rate in 1881.*

Ages.	Proportion per 1,000 of Population at all Ages.		Proportion of the Insane per 1,000 of Total Population Living at the same Ages.		Increase or Decrease per Cent. of Insanity Rate between 1871 and 1881.
	1871.	1881.	1871.	1881.	
All ages.....	1,000	1,000	3·039	3·253	+ 7·04
0—15	69	65	0·583	0·581	— 0·34
15—25	139	125	2·298	2·161	— 5·96
25—45	386	381	4·498	4·789	+ 6·47
45—65	298	316	6·158	7·205	+ 17·00
65 and upwards	108	113	6·951	8·000	+ 15·09

the proportion per million of the population returned in the householder's schedule as insane under the age of 15 years was 581, between 15 and 25 years 2,161, between 25 and 45 years 4,789, between 45 and 65 years 7,205, and among persons aged upwards of 65 years 8,000. It has been shown that the largest proportional increase in the aggregate of the insane between 1871 and 1881, occurred among persons aged 45 to 65 years. In order to determine satisfactorily how far this increase was due to what has been called accumulation arising from reduced mortality of the insane, and how much to increase in the registered numbers of cases of senile dementia, we are again placed at a disadvantage through neglect of the age-element in the Lunacy Commissioners' tables dealing with the insane population, and the omission to state the ages at death in asylums in each year.

Before leaving this subject of the varying age-distribution of

the insane, it is desirable to call attention to Table K in the Appendix, which shows the different age-distribution of the insane enumerated in 1881 in county and borough asylums, in other asylums, in workhouses, and of those not in public institutions.

VII.—*Mortality of the Insane, and its Effect upon the Numbers of the Living Insane.*

The rate of mortality among the insane treated completely in all its aspects, would alone supply, as it has before supplied, subject matter for discussion at ample length for a paper to be conveniently read before this Society. Dr. Farr's paper on the "Mortality of Lunatics," which has already been referred to, was based mainly upon the statistics of the Middlesex County Asylum at Hanwell, for the nine years 1831-39. At that time the materials for calculating rates of mortality of the insane were essentially meagre, but this is no longer the case, for urgent as may be the need at the present time of improved statistics of lunacy, the statistics that have been published in the valuable series of reports issued by the Lunacy Commissioners supply abundant material for studying the rates of mortality in the various asylums during the last thirty years, although, unfortunately, the age element has been almost ignored. On the present occasion it is only proposed to consider the subject of mortality among the insane with regard to its effect upon the aggregate number of the living insane.

It is, however, necessary in the first place to refer briefly to one or two of the various methods that have been adopted at various times and by different persons treating this subject. The late Colonel Sykes read a paper before this Society in June, 1840, entitled "Statistics of the Metropolitan Commission in Lunacy," in which he dealt with the statistics of the various licensed houses within the jurisdiction of that authority during the seven years, 1832-39. It was pointed out by Colonel Sykes that "the annual percentage proportion of deaths for the whole period among the whole number of patients was 10·13," and especial attention was drawn to the fact that among the pauper patients the percentage was 12·76, whereas among the private patients (about equal in number to the pauper patients,) the proportion did not exceed 7·56 per cent. Thus in equal numbers living, the proportion of deaths of paupers was as 168 to 100 deaths among private patients. Colonel Sykes's method of calculating the mortality in these asylums was however a defective one, which has even yet not altogether disappeared from lunacy reports; his method gave the "percentage of deaths to the total number under treatment," the latter number being obtained by adding the admissions during the period under observation to the number in the asylum at the

beginning of the period. The method is obviously unsound, as it takes no account of the discharges, and, in annual statistics, a patient admitted on the last day of the year counts as much in calculating the so-called death rate as a patient who has resided in the asylum throughout the year. Dr. Farr, without distinctly pointing out the unsoundness of Colonel Sykes's method, uses his facts relating to the metropolitan licensed houses for the purpose of comparison with those relating to the Hanwell Asylum, and calculates anew the rates of mortality by the more correct method which gives the annual proportion of deaths to the years of residence under observation." Thus calculated, the rate of mortality in these licensed houses during the period under observation was raised from 12·8 per cent. as given by Colonel Sykes, to 15·5; and by this method it was shown that the annual mortality of both male and female paupers in the licensed houses was nearly twice as great as the mortality of paupers at Hanwell, and was fully twice as great as the mortality of the other or private lunatics in the licensed houses. This startling annual rate of mortality, 15·5 per cent., is now matter of history, since no similar ratio prevails at the present time in any asylums, but it is especially noteworthy as throwing light upon, at any rate, a part of the large increase of existing cases of insanity during the last thirty years, for the mean annual rate of mortality among the aggregate inmates of all classes of asylums is now less than 10 per cent. of the average number resident.

Dr. Farr in the paper to which we have referred describes another method for measuring the mortality in lunatic asylums; namely, to calculate the proportion of the deaths to the discharges, the latter including both recoveries and deaths. It is scarcely necessary to point out that this method gives what may be called the case-mortality of lunacy, but not a death-rate, and really only shows the proportion which the deaths bear to the other discharges. The method is a useful one for measuring the case-mortality of various diseases treated in hospitals, but its uselessness for measuring the rate of mortality in asylums is shown by the result of its application to the facts relating to the metropolitan licensed houses given by Colonel Sykes, and those relating to the Hanwell Asylum given by Dr. Farr. Dr. Farr shows in his paper that the proportion of deaths to other discharges in the metropolitan licensed houses was much smaller than in the Hanwell Asylum, although, as we have seen, the true rate of mortality in the metropolitan licensed houses very far exceeded that in the Hanwell Asylum. The comparatively favourable proportion of deaths to discharged cases in the metropolitan licensed houses was due to the fact that the proportion of other discharges was considerably

larger than it was in Hanwell Asylum during the period under notice; but it would be highly hazardous to assume that this large proportion of discharges (not being deaths) represented an equally large proportion of recoveries or cures.

The only trustworthy method for measuring the annual rate of mortality in asylums, is the calculation of the proportion of deaths to the number of completed years of life during the period under observation. A near approximation to the number of years of life under observation may be obtained from the mean daily number of patients in residence, which is now used as a basis of the calculated death-rate in most lunacy reports.

In calculating the rates of mortality among different asylum populations, however, it is essentially necessary that the age element should not be lost sight of, since the age-distribution of the inmates of different asylums undoubtedly differs widely. Moreover, we have seen that the age-proportions of the inmates of the asylums of England and Wales have changed considerably during the last thirty years, and especially that the proportion of inmates at the later age periods has much increased. It follows, therefore, that the reduction in the recorded death-rates at all ages, as given by the Lunacy Commissioners, imperfectly reflects the true increase of longevity among the insane in recent years.

When we, however, attempt to measure the effect of this reduced death-rate upon the numbers of the living or surviving insane, we are again met by serious difficulties through the want of more precise statistics. The reports of the Lunacy Commissioners supply, it is true, the rates of mortality in asylums during a long series of years, but inasmuch as the increase of the asylum population is due in great measure to the absorption from time to time of large numbers of insane persons from the large reserve under detention in workhouses, or residing with relatives and others, it becomes necessary to know the changes in the rates of mortality not only among the insane in asylums, but among those not under treatment in asylums. It is a fact, however, that no successful attempt has hitherto been made to ascertain the rate of mortality either among the insane in workhouses, or among those in receipt of pauper relief residing with relatives and others. Without this information it is impossible either to compare the rates of mortality among these three distinct classes of the insane, or to calculate the effect upon the numbers of the living insane, of the large transferences that have taken place in recent years between these classes.

It is only possible therefore to consider the changes that have taken place in the rates of mortality in asylums, as shown by the reports of the Lunacy Commissioners, for there is little but con-

jecture upon which to estimate the rates of mortality that have prevailed and that now prevail among other classes of the insane.

The rate of mortality during the thirty years 1859-88 among the aggregate inmates of county and borough asylums, registered hospitals, metropolitan and provincial licensed houses, naval and military and criminal asylums, and among private single patients, calculated upon the average daily number resident, is given in the various reports of the Commissioners, and is shown in the following table:—

TABLE D.—*Annual Rates of Mortality in County and Borough Asylums, Licensed Houses, State Asylums, &c., in each of the Thirty Years 1859-88.*

Years.	Annual Death-Rate per Cent. of Average Number Resident.			Years.	Annual Death-Rate per Cent. of Average Number Resident.		
	Persons.	Males.	Females.		Persons.	Males.	Females.
Ten Years.				1869	10·72	12·61	9·02
1859-68	10·31	—	—	'70	10·29	12·09	8·67
'69-78	10·17	12·20	8·36	'71	10·23	12·24	8·43
'79-88	9·55	11·40	7·96	'72	9·19	11·10	7·48
				'73	10·16	12·27	8·26
				'74	10·29	12·25	8·51
Years.				'75	10·85	13·15	8·80
1859.....	9·90	Rates not given in the Lunacy Commissioners' reports		'76	10·08	12·05	8·32
'60.....	11·28			'77	9·90	12·03	8·01
'61.....	10·33			'78	10·00	12·17	8·08
'62.....	9·77			1879	10·47	12·30	8·88
'63.....	9·81			'80	9·08	10·80	7·58
'64.....	10·88			'81	9·24	11·33	7·43
'65.....	10·42			'82	9·11	11·11	7·37
'66.....	10·59			'83	9·47	11·67	7·60
'67.....	10·29			'84	9·51	11·45	7·86
'68.....	9·78			'85	9·37	10·70	8·24
				'86	10·03	11·90	8·43
				'87	9·56	11·14	8·20
				'88	9·69	11·62	8·03

The annual rate per 1,000 of the residents of these asylums, &c., ranged from 112·8 in 1860 to 90·8 in 1880. If we divide the thirty years into three decennial periods, we find that the mean annual death-rate per 1,000, which was 103·1 in 1859-68, declined to 101·7 in 1869-78, and further to 95·53 in 1879-88. We have seen that there has been during the thirty years a steady increase in the mean age of the inmates of asylums which, other conditions being equal, would naturally raise the death-rate, whereas we find that it has declined. However, if, as is probably the case, the proportion of acute cases is constantly declining, and the proportion of chronic cases is as constantly increasing, it may be presumed

that this would affect the death-rate in the opposite direction, and partly conduce to its decline. Whether or no the undoubted decline of the mortality among the residents of asylums can be claimed as evidence of improved and more successful treatment, interesting as the subject undoubtedly is, would be beside the present inquiry. But to return to the special point now under discussion, it is beyond question that the rate of mortality in asylums has declined, and that a certain increase in the existing cases of insanity must have resulted from this decline of mortality; but to carry us much further, we require to take into consideration the effect upon the mortality of the large transfer, from workhouses and residence with relatives, to asylums that has been in constant progress since 1859. It may be noted here that in 1859, of the total registered number of pauper insane, 56 per cent. were in asylums, 25 per cent. in workhouses, and 19 per cent. were residing with relatives and others; whereas according to the last published report of the Commissioners, the proportions in 1889 were 69 per cent. in asylums, 23 per cent. in workhouses, and only 8 per cent. residing with relatives and others. For the present purpose we require to know what would probably have been the rate of mortality among the transferred cases if they had remained in the workhouses or residing with relatives and others. Dr. Farr tells us in his valuable paper that Colonel Sykes's facts relating to the metropolitan licensed houses imply an annual death-rate of no less than 20·7 per cent. (26·8 per cent. among males and 16·4 per cent. among females) among the pauper inmates of these institutions during the six years 1833-39. Such a rate of mortality signifies practical extinction of a pauper insane population in a very few years, and is more than double the mean annual rate in the insane population of our lunatic asylums in recent years. Unfortunately there are no means for calculating the death-rate among pauper inmates of licensed houses (as compared with the rate among private inmates) subsequently to the period dealt with by Colonel Sykes and Dr. Farr, but the Commissioners' reports show that in 1870 a very high rate of mortality prevailed in the four metropolitan licensed houses, which then received considerable numbers of pauper patients.

The Metropolitan Asylums for Imbeciles were established at Leavesden and Caterham in 1870; and still more recently a third asylum was opened at Darenth. These asylums are legally classed as workhouses, and were intended for the reception of chronic pauper cases of mental unsoundness, which had previously been detained in workhouses, or had been farmed out in metropolitan licensed houses. They moreover undoubtedly tend to relieve the constant pressure for admission to the asylums now under the

control of the county of London. The numbers of inmates of these metropolitan asylums have steadily increased from 3,208 at the end of 1871, to 4,919 at the end of 1888. The carefully prepared statistics issued by the Statistical Committee of the Metropolitan Asylums Board supply the means for tracing the changes in the rate of mortality that have taken place among the inmates of these asylums since they were established. The rate of mortality (annual deaths to the mean daily number resident), as may be seen from the figures in the accompanying table, ranged in the eighteen years

TABLE E.—*Average Numbers Resident, Deaths, and Annual Death-Rate per Cent. in the Metropolitan Asylums for Imbeciles at Leavesden, Caterham, and Darenth, 1871-88.*

Years.	Average Numbers Resident.			Deaths.			Percentage of Deaths to Average Numbers Resident.		
	Males.	Females.	Total.	Males.	Females.	Total.	Males.	Females.	Total.
1871	1,281	1,520	2,801	263	203	466	20·53	13·35	16·63
'72	1,455	1,826	3,281	248	203	451	17·04	11·11	13·74
'73	1,461	1,941	3,402	228	190	418	15·60	9·78	12·28
'74	1,507	2,073	3,580	202	213	415	13·40	10·27	11·59
'75	1,540	2,106	3,646	208	246	454	13·50	11·68	12·45
'76	1,653	2,146	3,799	198	182	380	11·97	8·48	10·00
'77	1,720	2,381	4,101	212	153	365	12·32	6·42	8·90
'78	1,754	2,280	4,034	168	134	302	9·57	5·87	7·48
'79	1,791	2,202	3,993	178	145	323	9·93	6·58	8·08
1880	1,842	2,329	4,171	161	137	298	8·74	5·88	7·14
'81	1,843	2,371	4,214	173	188	361	9·38	7·92	8·56
'82	1,922	2,424	4,346	148	169	317	7·70	6·97	7·29
'83	2,090	2,570	4,660	160	200	360	7·65	7·78	7·72
'84	2,136	2,652	4,788	158	178	336	7·39	6·70	7·01
'85	2,106	2,591	4,697	168	212	380	7·97	8·18	8·09
'86	2,118	2,636	4,754	162	164	326	7·64	6·22	6·85
'87	2,130	2,647	4,777	152	201	353	7·14	7·59	7·39
'88	2,156	2,688	4,844	185	201	386	8·58	7·48	7·97

1871-88 from 16·63 per cent. in 1871, to 6·85 per cent. in 1886. If we divide these eighteen years into quinquennial periods, we find, as is shown in the accompanying table (F), that in the five years

TABLE F.—*Average Annual Death-Rate in the Metropolitan Asylums for Idiots and Imbeciles in Quinquennial Periods, 1871-88.*

Years.	Annual Rate of Mortality per Cent. of Average Number Resident.		
	Males.	Females.	Total.
1871-75	16·01	11·24	13·34
'76-80	10·51	6·65	8·32
'81-85	8·02	7·51	7·73
'86-88	7·79	7·10	7·40

1871-75 the mean rate was 13.34 per cent., that it declined to 8.32 in 1876-80, and further to 7.73 in 1881-85; and that in the three years 1886-88 it further fell to 7.40 per cent. This remarkable decline in the death-rate of the inmates of these asylums has an important bearing upon the problem under consideration. From statistics previously given, it may be doubted whether the death-rates that prevailed during the earlier years of these institutions, high as they were compared with the rates in recent years, exceeded the rates that prevailed among pauper patients in the metropolitan licensed houses in years prior to the existence of these metropolitan asylums. It appears reasonable moreover to assume the improbability that the average rate of mortality among insane paupers in workhouses, or residing with relatives was much lower than those recorded in the metropolitan asylum houses. This suggests the hypothesis that the mean death-rate among the pauper insane detained in workhouses and residing with relatives (from whom a constant transfer is taking place to the county asylums), is probably not much less than 13 per cent. per annum, while, among those under treatment in asylums the mean annual mortality is about 10 per cent. of the average number resident.

It will be desirable now to calculate what has been the probable effect of this marked decline in the recent rate of mortality in the Metropolitan Asylum for Imbeciles upon the numbers of surviving inmates. The mean annual mortality during the three years 1871-73 was 14.1 per cent. If this death-rate had been maintained during the subsequent fifteen years under observation, and the extra death-vacancies had been filled by extra admissions, the deaths in the fifteen years would have exceeded by 3,712 the actual number recorded in the fifteen years, which was 5,356. If, on the other hand, this high death-rate had been maintained from year to year without any increase of admissions, the extra death-vacancies not being filled by extra admissions, the mean number of residents, instead of having increased as they did from 3,532 at the beginning of 1874, to 4,919 at the end of 1888, would obviously not have increased to the same extent. In order to ascertain what, under these circumstances, would have been the precise effect of the maintenance during 1874-88 of the high mean annual death-rate in the three years 1871-73, the probability of dying in a year was obtained from the annual death-rate (14.08 per cent.), and applied to the numbers living at the beginning of each year, in order to ascertain the number of deaths that would occur during the year. The excess of patients admitted over those discharged in each year were assumed to have resided on the average half a year in the asylums, and the number of deaths calculated in the same manner. The numbers of survivors from the inmates in

residence at the beginning of the year, and from the admissions less the discharges, together gave the number in residence at the end of the year. By this method it is calculated that, on the above mentioned hypotheses, the number remaining in the asylums at the end of the year 1888 would have been only 3,346, instead of the 4,919 actually then in residence, showing an excess of survivors in these asylums of 1,573, due entirely to reduction in the rate of mortality. The results of these calculations are given in Tables L and M of the Appendix. It should be borne in mind that this large increase in the number of the existing cases of pauper insanity in the metropolis at the end of the year 1888, was effected by a reduction during fifteen years in the death-rate among but about a quarter of the aggregate cases belonging to the metropolis; that during the same period of fifteen years a very appreciable decline also took place in the rate of mortality in the county asylums, which further contributed to the increased survivorship, which has been called accumulation. Had, however, these 1,573 metropolitan pauper insane patients died during the fifteen years, instead of surviving, the aggregate number of the metropolitan insane reported to the Lunacy Commissioners on the 1st January, 1889, would have been 15,103, instead of 16,676; the rate to population would have been 3.47 per 1,000, instead of 3.83; and the percentage of increase in the eighteen years 1871-89 would have been but 22.2 per cent., instead of 35.0 per cent. as shown in Table J of the Appendix.

If the tables given by the Lunacy Commissioners were in this respect as satisfactory as are those published by the Statistical Committee of the Metropolitan Asylums Board, it would be a comparatively simple matter to calculate the precise effect upon the existing numbers of the insane in England and Wales of the reduced death-rates in asylums, but such effect would be undoubtedly outweighed by the difference between the death-rate of the inmates constantly being drawn into asylums by various influences, and the death-rate to which they would have been subject had such added lunatics been left in workhouses or residing with relatives and others.

VIII.—*The Effect of Insanity on Mortality.*

Dr. Farr, in the paper already referred to, among other branches of the statistics of insanity, carefully considered and discussed the questions, "What is the mortality among lunatics under favourable circumstances?" and "Is insanity a fatal disease?" As an instructive commentary upon the misconception which generally existed on this subject only a few years before the time his paper was written, Dr. Farr referred to the case of *Fisher v. Beaumont*, which was tried at the York Assizes in 1835. This

was an action brought by the executors of a clergyman to recover 2,000*l.* from the Providence Assurance Company, being the amount of an assurance effected upon his life. In charging the jury, the judge said that they had to consider whether insanity had a tendency to shorten life. If insanity had such a tendency, they must find for the defendant; if not, for the plaintiff. The medical evidence was conflicting; and the jury, after a short deliberation, found for the plaintiff, on the ground that insanity had no tendency to shorten life. The fact is that fifty years ago little or nothing was known as to the true import of rates of mortality either among the general population or among the insane, and the knowledge that considerable numbers of the insane lived to advanced years, brought conviction to many minds that insanity was not a fatal disease. Dr. Farr, however, clearly pointed out that the mean age of lunatics in asylums at that time was "about 35—40" (it is now considerably greater), and that whereas the rate of mortality in England and Wales at the age 30—40 was 1·2, and at 40—50 was 1·5 per cent. (and in cities at corresponding ages did not exceed 2 per cent.), it was equal to 9 per cent. in the Bethlehem Asylum during the years 1827-39, although dangerous cases were carefully excluded from this asylum; and at the Gloucester Asylum, where the treatment at that time showed most favourable results, the mortality was 7 per cent. Dr. Farr wrote, "the mortality of severe cases of insanity cannot, I think, in favourable circumstances be less than 6 per cent.; so that the mortality is three times greater among lunatics than among the general population at the same age."

At the present time, however, we have a right to expect more definite information as to the influence of insanity upon human mortality; and as to the rate of mortality among the insane at different ages, and among the insane under different treatment. It ought not to be necessary to point out that any attempt to compare the mortality between two asylums without taking into account the ages of the inmates, and the proportions of the acute and chronic cases, can yield no useful results. Notwithstanding this fact, we look in vain in the reports of the Lunacy Commissioners for any information as to the ages of the insane, or as to the ages at which the deaths take place; and this although most of this invaluable information exists in the returns made to the Commissioners, while the rest should be easily obtained.

The reports of many of the asylums give more or less information as to the ages of their living and deceased inmates, but the information is given with far too little uniformity to be used for the purpose of this paper, as a large basis of facts is essential for the calculation of rates of mortality at groups of ages trustworthy

for comparative purposes. The useful statistics given by the Statistical Committee of the Metropolitan Asylums Board to which reference has already been made, supply figures which afford valuable assistance to the consideration of the rate of mortality due to the form of insanity treated in these asylums. These tables give the age-distribution of the mean number of idiots and imbeciles resident in each year in the Metropolitan Asylums for Imbeciles. Each recent annual report also shows the ages of the deceased inmates, but by a singular oversight they omit to give a summary table of the ages of the inmates who died in the asylums in the years 1871-85, so that it is not possible to calculate the rates of mortality in groups of ages for the whole eighteen years, which would supply a larger, and thus most valuable basis for calculation. It has been necessary therefore to be content with the facts for the three years 1886-88, for the purpose of these rates of mortality at groups of ages. The years of life under observation in these three years were 14,375. By restricting the calculation to a few large age-periods, a sufficiently large basis of facts is obtained, thus giving fairly trustworthy rates, although it is much to be regretted that the facts are not available for the whole eighteen years. As will be seen from the following table, four age-periods have been adopted, 20—40, 40—60, 60—80, and 80 and upwards; and from the aggregate years of life under observation and the aggregate deaths in the three years, the annual rate of mortality per 1,000 living at each age-period has been calculated. For comparison with these rates is also given the mean annual rate of mortality per 1,000 at the same age-periods in the general London population during the same three years.

TABLE G.—*Annual Rate of Mortality per 1,000 of Idiots and Imbeciles Living at different Age-Periods in the Metropolitan Asylums during the Three Years 1886-87-88, compared with the Mortality in the General London Population, at the same Age-Periods, and in the same Years.*

	Annual Rate of Mortality per 1,000 Persons Living at each Age-Period.				
	Ages in Years.				
	20—40.	40—60.	60—80.	80 and upwards.	60 and upwards.
Metropolitan asylums for } idiots and imbeciles..... }	42·8	56·8	178·2	457·3	195·7
General London population	6·9	19·2	61·9	209·2	70·8
In equal numbers living, } deaths in metropolitan } asylums to 100 in London }	620	296	288	219	276

It should be stated that the facts relating to the small numbers of the inmates of these asylums under 20 years of age have been omitted from the table, as too few to yield useful rates. The mean annual death-rate at the age-periods dealt with in the table increased from 42·8 per 1,000 among the imbeciles aged 20—40; to 56·8 among those aged 40—60, to 178·2 among those aged 60—80, and to 457·3 per 1,000 among those aged upwards of 80 years; or if on account of the small numbers living over 80 years of age, we treat the numbers aged upwards of 60 years as one age-period, the annual rate of mortality is 195·7 per 1,000. The table also shows that compared with the London rates at the same ages the mortality of the inmates of the asylums for imbeciles was six times as high in the age-period 20—40, three times as high at 40—60, rather less than three times at 60—80, and not much more than twice as high at 80 and upwards; moreover it was less than three times as high among all the inmates of these asylums aged upwards of 60 years. Speaking more generally, it may be said that between 20 and 40 years (at which age the bulk of the admissions take place, and in which period is found a larger proportion of the inmates than in any other) the rate of mortality is six times that which prevails in the general population, whereas at subsequent ages the mortality is less than three times the normal rate among the general population. These metropolitan asylums for imbeciles are mainly filled with chronic and harmless cases, which probably are liable to rates of mortality varying very considerably from those that prevail among the inmates of county asylums. Indeed the rates at all ages, without any correction for variations of age-distribution, have in recent years been, as we have seen, nearly a third lower in these asylums for imbeciles than in the aggregate of the lunatic asylums. It may, however, be pretty safely assumed that the markedly greater excess of mortality due to insanity in the asylums for imbeciles at the age-period 20—40 is due to the fact that at these ages the proportion of comparatively acute cases is far larger than at subsequent ages. It is moreover more than probable that if the means existed for calculating the excess of mortality due to insanity at different ages in county asylums, by the same method, a similarly greater excess would be found to prevail at the earlier ages at which the bulk of the cases are admitted; indeed, one would expect to find this feature of the mortality of the insane more strongly marked in county asylums on account of the far larger proportion of acute cases they contain. Furthermore this presumption is fully supported by Dr. Farr's investigation of the statistics of Hanwell Asylum for the years 1831-40. He states that the annual rate of mortality among the patients in the first half-year of residence was 24·6 per cent., whereas

it declined in the next year of residence to 13·8 per cent., in the following year to 8·4 per cent., and in the two following years to 7·1 and 7·0 per cent. respectively. It is evident therefore that in order to institute useful and trustworthy comparison between the mortality statistics of different lunatic asylums, it is absolutely necessary to take into account not only the age of the inmates and the proportion of acute and chronic cases, but also the proportion of admissions to the mean annual number of residents, since it is beyond doubt that a large proportion of admissions must tend to materially raise the rate of mortality. On this account too much importance should not be attached to the rate of mortality in an asylum as a test of successful treatment, unless duly corrected for all disturbing influences, because, as Dr. Farr pointed out, the “truest test of successful treatment is the proportion of patients “that recover their reason in the shortest time.” There can, however, be no reasonable doubt as to the value of carefully calculated mortality statistics, especially when they are given for different age-periods, as these facts have an important bearing upon the aggregation of cases of insanity by what has been called accumulation.

IX.—*Conclusion.*

It is impossible in summing up the conclusions that are justified by the statistics dealt with in this paper, and suggested by the arguments based upon them, to avoid referring to the regrettably negative character of much of the evidence that has been adduced to discredit the general assertion of the steadily increasing prevalence of insanity in this country. It is in the highest degree disappointing to have had to urge that the statistics published in the reports of the Lunacy Commissioners are undoubtedly inadequate for the formation of a sound conclusion as to real increase or decrease of prevailing insanity. This is due in great measure to the fact that statistical information concerning the registered insane which is furnished to the Commissioners periodically by the various authorities having charge of the insane has not been published or utilised; this information being supplied in accordance with the Lunacy Act 16 and 17 Vict., cap. 97, on forms duly scheduled in the Act. Although no completely satisfactory conclusion as to the truth or otherwise of this supposed increase of insanity is under the circumstances possible, it may be useful briefly to enumerate a few of the facts referred to in this paper which undeniably appear to discredit this assertion of increase:—

1. It has frequently been admitted by the Lunacy Commissioners that there exists an unknown number of the insane

concerning whom they possess no official information, and who are not included in the numbers dealt with in their reports. It is obvious that of the insane not under treatment in asylums, or detained in workhouses, the Commissioners can only have assurance of official cognisance of cases in receipt of pauper relief; the number of "private single patients" on the 1st of January, 1889, being but 442.

2. The census enumerations of 1871 and 1881 throw light upon the amount of this unregistered insanity, since the householder's schedule at each of those censuses required information concerning all persons of unsound mind enumerated in those years. The numbers of the insane so returned were 69,019 in 1871, and 84,503 in 1881; these numbers exceeded by 12,264 and 11,390, respectively, the registered cases of insanity reported by the Commissioners as existing on the 1st of January in each of those years. These unregistered cases undoubtedly constitute a reserve which supplies from time to time no inconsiderable proportion of the so-called new cases registered from year to year.

3. There is the best ground for believing (a) that these census numbers of the insane err on the ground rather of deficiency than of excess; and (b) that the numbers enumerated in 1881 were more correct, or rather, less deficient than those returned at the preceding enumeration.

4. The Lunacy Commissioners have frequently expressed the belief that a variety of influences have from time to time in recent years operated to bring within their official cognisance a constantly increasing proportion of the existing cases of insanity. The census enumerated numbers of the insane in 1871 and 1881 supply a strong corroboration of this opinion of the Commissioners, since the numbers known to them in 1871 represented only 82·1 per cent. of the total enumerated cases, whereas in 1881 the known cases had during the ten years increased to 86·5 per cent. If moreover the census enumeration was more complete in 1881 than it had been in 1871, the percentages above quoted inadequately represent the extent of the improvement in the registration of cases by the Commissioners.

5. Assuming the greater accuracy of the census figures as a measure of the aggregate cases of insanity, the increase of existing insanity in the years 1871-81 was 7 per cent. instead of 12 per cent. as shown by the Commissioners' figures. Whether even this 7 per cent. represents however a real increase, depends partly upon the extent to which the census enumeration in 1881 was more complete than that in 1871, and partly upon the actual effect of the reduced mortality upon the number of the surviving insane.

6. The proportion to population of cases of insanity known to

the Commissioners, although showing a marked and continuous increase during the thirty years embraced by their statistics, also show a marked decline in the rate of increase. Comparison between the mean annual rate of insanity in the five years 1859-63 and that in the following five years 1864-68, shows an increase of .129 per cent., whereas the rate of increase between succeeding quinquennia has since declined to 11.7, 7.6, 5.0, and 2.8 per cent. respectively.

7. The value of the Commissioners' statistics of admissions to asylums is vitiated by the impossibility of separating the really new cases from those admitted from among cases already existing in workhouses, or from pauper cases residing with relatives, or from the large reserve of unregistered cases. It may be pointed out, however, that in spite of constantly increasing accuracy of registration the proportion of admissions to population has shown no increase during the last ten years, and actually declined during the five years 1884-88, compared with preceding five-year periods.

8. Apart from the misconception due to accepting the increasing ratios of registered insanity as conclusive evidence of a real increase of insanity, there has beyond question been an increase in recent years of existing cases of insanity due to what may correctly be called "accumulation."

9. It has been shown in this paper that there has been a marked increase in the mean age of inmates of asylums enumerated at each of the last four censuses in 1851, 1861, 1871, and 1881. The proportion of these inmates living in asylums under the age of 45 years has steadily declined since 1851, while the proportion living above that age has as steadily increased. The mean age of the aggregate number of insane persons enumerated at the last census in 1881 also showed a decided increase upon the mean age of those enumerated in 1871; and as in the case of the asylum population in the thirty years 1851-81, the proportion of the aggregate insane under the age of 45 years declined between 1871 and 1881, while the proportion above that age had increased.

10. Insurmountable difficulties lie in the way of measuring the effect on the mortality of the aggregate insane, and hence upon the total existing cases of insanity, of the constant increase in the proportions of the insane in asylums, because no information exists concerning the rates of mortality among the insane in workhouses, or among those neither in asylums or workhouses. Our information is unfortunately confined to the rates of mortality in asylums, which declined from 10.31 per cent. in 1859-68, to 10.17 in 1869-78, and to 9.55 in 1879-88. The statistics published by the Lunacy Commissioners moreover do not give the necessary data for calculating the precise effect of this reduction in the death-rate of our

large asylum population; this reduction has, however, undoubtedly contributed largely to the increase of the existing cases of insanity, which has been miscalled an increased prevalence of insanity.

11. The well arranged statistics issued by the Statistical Committee of the Metropolitan Asylums Board make it possible to measure with approximate accuracy the effect of reduced mortality upon the number of insane patients in the metropolitan asylums for imbeciles at Leavesden, Caterham, and Darenth. These asylums contained only 1,344 inmates at the beginning of the year 1871, whereas the number had increased to 4,919 at the end of 1888. The annual death-rate among these inmates almost steadily declined from 16·63 per cent. in 1871, to 6·85 per cent. in 1886; the mean annual rate declined from 14·08 per cent. in the first three years 1871-73, to 7·40 per cent. in the three years 1886-88. If the mean death-rate in the three years 1871-73 had been maintained during the succeeding fifteen years, and if the average number resident had been maintained by extra admissions, the number of deaths in the asylums would have exceeded the number actually recorded by 3,712. If, on the other hand, the high death-rate in the first three years had been maintained, and the vacancies due to the excess of this death-rate upon the lower rates actually recorded had not been filled by extra admissions, the inmates of these asylums at the end of 1888 would have been but 3,346, instead of the 4,919 actually in residence, of whom 1,573 owed their survival to the marked decline in the death-rate of the asylums in recent years. This may be accepted as an example of the effect of reduced rates of mortality upon existing cases of insanity.

Without therefore venturing to say that there has been no increase of insanity in England in recent years, many reasons have been pointed out for refusing to accept any insanity statistics that we at present possess as conclusive evidence of a real increase of the rate of occurring insanity. Moreover, any disappointment due to failure in the present paper to arrive at a more definite solution on this important problem, will be more than compensated if it should lead to such improvement in our official statistics of insanity as will supply the means for a more definite conclusion on the subject at no distant date.

In the course of the paper the deficiencies of the statistics issued by the Lunacy Commissioners have been described with considerable detail. It is therefore only necessary now to refer to one or two directions in which the deficiency is most fatal to the inquiry which has been the main subject of the paper. (1.) The ages of the insane under different kinds of treatment should be tabulated for a series of years. (2.) The ages at death of the insane persons under such different kinds of treatment should also

be given for a series of years. (3.) More precise information should be given concerning the previous history of all the new cases coming under observation during each year. (4.) Speaking generally, the tables in the Commissioners' reports should be remodelled so as at any rate to include the improved series of tables recently adopted by the Statistical Committee of the Metropolitan Asylums Board.

It is even still more essential to the definite solution of the problem under discussion, that provision should at once be made for obtaining trustworthy statistics concerning the annual admissions, discharges, and deaths occurring among the pauper insane retained in workhouses, and similar information relating to insane paupers in receipt of out-door relief. It is clear that no insuperable difficulty stands in the way of obtaining this information, and that the responsibility for its collection and utilisation rests between the Local Government Board and the Lunacy Commissioners.

Finally, let me express the hope, based in great measure upon the assistance derived in this paper from the census enumeration of the insane in 1871 and in 1881, that at the approaching census no retrogressive step will be taken in the direction of omitting from the householder's schedule the requisition for information concerning persons of unsound mind. Whatever may be the decision of the Government as to the desire existing in some quarters to extend the field of inquiry at the next census, this Society will undoubtedly admit that it is far more important to ensure increasing accuracy in the collection, analysis, and tabulation of information under a comparatively limited number of headings, than to extend the inquiry at the risk of decreasing instead of increasing accuracy. At the same time, any reduction in the scope of inquiry to which householders have become accustomed at the last two censuses, such as the omission of information as to unsoundness of mind, would be a retrogression seriously to be deplored, more especially at a time when the supposed increase of insanity is a subject which deservedly calls for further information and investigation.

APPENDIX.

TABLE H.—*Insane Inmates of Asylums and Workhouses reported to the Lunacy Commissioners in 1881, Insane Persons not in Asylums or Workhouses enumerated in 1881, and Percentage of one to the other.*

Cols.....	1	2	3
Counties.	Insane Inmates of Asylums and Workhouses. (Lunacy Commissioners.)	Enumerated Insane, not in Asylums or Workhouses.	Percentage of Figures in Col. 2 to those in Col. 1.
England and Wales	59,218	19,279	32·5
Middlesex	} 16,751	3,237	19·3
Surrey			
Kent			
Sussex	1,069	498	46·6
Hampshire	1,409	454	32·2
Berkshire	674	217	32·2
Hertfordshire	540	216	40·0
Buckinghamshire	464	164	35·3
Oxfordshire	571	173	30·3
Northamptonshire	612	251	41·0
Huntingdonshire	140	54	38·6
Bedfordshire	397	133	33·5
Cambridgeshire	406	233	57·4
Essex	1,222	441	36·1
Suffolk	747	452	60·5
Norfolk	1,110	425	38·3
Wiltshire	744	315	42·3
Dorsetshire	509	197	38·7
Devonshire	1,401	605	43·2
Cornwall	634	302	47·6
Somersetshire	1,186	611	51·5
Gloucestershire	1,428	500	35·0
Herefordshire	362	136	37·6
Shropshire	698	278	39·8
Staffordshire	1,431	774	52·3
Worcestershire	1,172	289	24·7
Warwickshire	1,922	495	25·8
Leicestershire	796	224	28·1
Rutlandshire	47	19	40·4
Lincolnshire	816	424	52·0
Nottinghamshire	808	307	38·0
Derbyshire	634	245	38·6
Cheshire	1,165	460	39·5
Lancashire	7,198	1,853	25·7
Yorkshire	4,655	1,734	37·3
Durham	1,193	457	38·3
Northumberland	822	299	36·4
Cumberland	474	124	26·2
Westmorland	147	65	44·2
Monmouthshire	565	206	36·5
South Wales	1,481	848	57·3
North „	768	564	73·4

TABLE I.—*Total Pauper Insane reported by the Lunacy Commissioners in 1881, Insane Persons not in Workhouses or Asylums, enumerated in 1881, less those reported by the Lunacy Commissioners to be residing with Relatives, &c., and Percentage of one to the other.*

Cols.	1	2	3
Counties.	Total Pauper Lunatics reported by the Lunacy Commissioners.	Census Numbers of Insane, not Enumerated in Asylums or Workhouses, less those Reported by the Lunacy Commissioners as Residing with Relatives, &c.	Percentage of Figures in Col. 2, to those in Col. 1.
England and Wales	65,345	13,152	20·1
Middlesex	17,287	2,701	15·6
Surrey			
Kent			
Sussex	1,229	338	27·5
Hampshire	1,586	277	17·5
Berkshire	760	131	17·2
Hertfordshire	596	160	26·8
Buckinghamshire	506	122	24·1
Oxfordshire	672	72	10·7
Northamptonshire	707	156	22·1
Huntingdonshire	149	45	30·2
Bedfordshire	478	52	10·9
Cambridgeshire	512	127	24·8
Essex	1,367	296	21·7
Suffolk	892	307	34·4
Norfolk	1,317	218	16·5
Wiltshire	896	163	18·2
Dorsetshire	572	134	23·4
Devonshire	1,670	336	20·1
Cornwall	709	227	32·0
Somersetshire	1,416	381	26·9
Gloucestershire	1,627	301	18·5
Herefordshire	460	38	8·3
Shropshire	751	225	30·0
Staffordshire	1,609	646	40·1
Worcestershire	1,339	122	9·1
Warwickshire	2,314	103	4·5
Leicestershire	870	150	17·2
Rutlandshire	53	13	24·5
Lincolnshire	938	302	32·2
Nottinghamshire	1,001	114	11·4
Derbyshire	683	196	28·7
Cheshire	1,279	346	27·1
Lancashire	7,435	1,616	21·7
Yorkshire	4,957	1,432	28·9
Durham	1,272	378	29·7
Northumberland	900	221	24·6
Cumberland	502	96	19·1
Westmorland	159	53	32·1
Monmouthshire	674	97	14·4
South Wales	2,074	255	12·3
North „	1,127	205	18·2

TABLE J.—*Insane Paupers reported by the Lunacy Commissioners in the various Registration Counties of England and Wales in 1871 and in 1889 per 1,000 of the Estimated Population, and Increase or Decrease per Cent. of the Rate in 1889 compared with the Rate in 1871.*

Registration Counties.	Persons.			Males.			Females.		
	Insanity Rate per 1,000 of Population.		Increase or Decrease per Cent. of Rate in 1889 upon that in 1871.	Insanity Rate per 1,000 of Population.		Increase or Decrease per Cent. of Rate in 1889 upon that in 1871.	Insanity Rate per 1,000 of Population.		Increase or Decrease per Cent. of Rate in 1889 upon that in 1871.
	1871.	1889.		1871.	1889.		1871.	1889.	
England and Wales ...	2'23	2'60	+ 16'6	2'04	2'40	+ 17'6	2'41	2'80	+ 16'2
London	2'84	3'83	+ 35'0	2'47	3'47	+ 40'5	3'17	4'15	+ 30'9
Surrey (extra-met.) ...	1'94	2'01	+ 3'6	1'70	1'83	+ 7'6	2'17	2'19	+ 0'9
Kent "	2'13	2'55	+ 19'7	1'78	2'17	+ 21'9	2'49	2'93	+ 17'8
Sussex	2'57	2'57	0'0	2'37	2'27	— 4'2	2'66	2'83	+ 6'4
Hampshire	2'50	3'11	+ 24'4	2'29	2'92	+ 27'5	2'71	3'29	+ 21'4
Berkshire	3'17	3'01	— 5'0	2'96	2'52	— 14'9	3'37	3'49	+ 3'6
Middlesex (extra-met.)	1'92	1'84	— 4'2	1'62	1'65	+ 1'9	2'19	2'02	— 7'8
Hertfordshire	2'43	2'91	+ 19'7	2'43	2'59	+ 6'6	2'42	3'23	+ 33'5
Buckinghamshire	2'85	3'11	+ 9'1	2'47	2'50	+ 1'2	3'20	3'77	+ 17'8
Oxfordshire	3'10	3'64	+ 17'4	2'96	2'99	+ 1'0	3'23	4'27	+ 32'2
Northamptonshire	2'51	2'48	— 1'2	2'35	2'17	— 7'7	2'66	2'79	+ 4'9
Hampshire	2'31	2'96	+ 28'1	2'11	2'98	+ 41'2	2'50	2'94	+ 17'6
Hedfordshire	2'49	3'12	+ 25'3	2'35	3'28	+ 39'6	2'61	2'98	+ 14'9
Cambridgeshire	2'32	3'16	+ 36'2	2'14	2'82	+ 31'8	2'50	3'50	+ 40'0
Essex	2'31	2'33	+ 0'9	1'97	1'87	— 5'1	2'65	2'80	+ 5'7
Suffolk	2'46	2'71	+ 10'2	2'20	2'49	+ 13'2	2'70	2'93	+ 8'5
Norfolk	2'64	3'14	+ 18'9	2'30	2'77	+ 20'4	2'95	3'48	+ 18'0
Wiltshire	3'27	3'66	+ 11'9	2'85	3'20	+ 12'3	3'69	4'12	+ 11'7
Dorsetshire	2'59	3'20	+ 23'5	2'54	2'92	+ 15'0	2'63	3'47	+ 31'9
Devonshire	2'37	3'05	+ 28'7	2'11	2'86	+ 35'5	2'61	3'21	+ 23'0
Cornwall	1'58	2'67	+ 69'0	1'45	2'45	+ 69'0	1'70	2'86	+ 68'2
Somersetshire	2'64	2'96	+ 12'1	2'40	2'70	+ 12'5	2'85	3'19	+ 11'9
Gloucestershire	3'05	3'52	+ 15'4	2'83	3'18	+ 12'4	3'24	3'82	+ 17'9
Herefordshire	3'39	4'59	+ 35'4	2'88	4'02	+ 39'6	3'91	5'14	+ 31'5
Shropshire	2'60	2'99	+ 15'0	2'11	2'60	+ 23'2	3'09	3'38	+ 9'4
Staffordshire	1'76	2'11	+ 19'9	1'67	2'07	+ 23'9	1'85	2'15	+ 16'2
Worcestershire	2'22	2'37	+ 6'8	2'04	2'16	+ 5'9	2'39	2'56	+ 7'1
Warwickshire	2'45	2'94	+ 20'0	2'27	2'80	+ 23'4	2'62	3'06	+ 16'8
Leicestershire	2'92	2'62	— 10'3	2'89	2'44	— 15'6	2'95	2'78	— 5'8
Rutlandshire	2'18	2'80	+ 28'4	2'57	3'32	+ 29'2	1'79	2'28	+ 27'4
Lincolnshire	2'02	1'97	— 2'5	1'83	1'75	— 4'4	2'22	2'19	— 1'4
Nottinghamshire	2'21	2'39	+ 8'5	2'08	2'22	+ 6'7	2'33	2'55	+ 9'4
Derbyshire	1'84	1'73	— 6'0	1'88	1'80	— 4'3	1'80	1'66	— 7'8
Cheshire	1'83	2'15	+ 17'5	1'74	2'04	+ 17'2	1'91	2'25	+ 17'8
Lancashire	1'93	2'23	+ 15'5	1'88	2'14	+ 13'8	1'98	2'32	+ 17'2
Yorkshire	1'51	1'79	+ 18'5	1'45	1'71	+ 17'9	1'57	1'86	+ 18'5
Durham	1'29	1'52	+ 17'8	1'30	1'51	+ 16'2	1'27	1'53	+ 20'5
Northumberland	2'00	2'32	+ 16'0	2'03	2'30	+ 13'3	1'97	2'34	+ 18'8
Cumberland	2'10	2'05	— 2'4	2'25	2'22	— 1'3	1'96	1'89	— 3'6
Westmorland	2'01	2'34	+ 16'4	2'06	2'32	+ 12'6	1'96	2'37	+ 20'9
Monmouthshire	2'49	3'09	+ 24'1	2'11	2'83	+ 34'1	2'90	3'36	+ 16'0
South Wales	2'09	2'44	+ 16'7	1'91	2'23	+ 16'8	2'27	2'65	+ 16'7
North "	2'25	2'56	+ 13'8	2'05	2'30	+ 12'2	2'45	2'82	+ 15'1

TABLE K.—*Proportional Age Distribution of Persons enumerated as Lunatic or Insane (excluding Idiots and Imbeciles) at the Census in 1881, in County and Borough Lunatic Asylums, in other Lunatic Asylums, and not in Public Institutions.*

Where Enumerated.	All Ages.	0—15.	15—25.	25—45.	45—65.	65 and upwards.
In county and borough asylums	1,000	2	55	429	399	115
„ other lunatic asylums	1,000	1	62	410	391	136
„ workhouses	1,000	6	64	334	390	206
Not in public institutions	1,000	37	91	346	355	171
Total of those enumerated as lunatic or insane	1,000	3	58	417	395	127

TABLE L.—*Metropolitan Asylums for Adult Imbeciles at Leavesden, Caterham, and Darenth.—Numbers Resident, Admissions, Discharges, and Deaths during the Eighteen Years 1871-88.*

Years.	Resident on 1st January.	Admissions.	Discharges.	Deaths.	Remaining on 31st December.
1871	1,344	2,599	269	466	3,208
'72	3,208	839	188	451	3,408
'73	3,408	728	186	418	3,532
'74	3,532	801	206	415	3,652
'75	3,652	559	139	454	3,618
'76	3,618	1,100	161	380	4,177
'77	4,177	337	78	365	4,071
'78	4,071	305	95	302	3,979
'79	3,979	435	70	323	4,021
1880	4,021	626	87	298	4,262
'81	4,262	417	93	361	4,225
'82	4,225	773	89	317	4,592
'83	4,592	577	72	360	4,737
'84	4,737	481	110	336	4,772
'85	4,772	429	105	380	4,716
'86	4,716	498	105	326	4,783
'87	4,783	531	108	353	4,853
'88	4,853	609	96	386	4,919

TABLE M.—*Metropolitan Asylums for Adult Imbeciles at Leavesden, Caterham, and Darenth, Numbers of Residents, Admissions, Discharges, and Deaths, in the Fifteen Years 1874-88, Estimated on the Hypothesis of the continuance of the High Mean Death-Rate in the Three Years 1871-73.*

Years.	Estimated Residents on 1st January.	Actual Admissions.	Estimated Discharges.	Estimated Deaths.	Remaining on 31st December.
1874	3,532	801	206	504	3,623
'75	3,623	559	138	504	3,540
'76	3,540	1,100	158	528	3,954
'77	3,954	337	74	537	3,680
'78	3,680	305	86	499	3,400
'79	3,400	435	60	472	3,303
1880	3,303	626	71	471	3,387
'81	3,387	417	74	468	3,262
'82	3,262	773	69	475	3,491
'83	3,491	577	54	494	3,520
'84	3,520	481	82	489	3,430
'85	3,430	429	75	474	3,310
'86	3,310	498	74	463	3,271
'87	3,271	531	74	460	3,208
'88	3,268	609	65	466	3,346
'89	3,346	—	—	—	—

Note.—For the purpose of the above table, the actual admissions to these asylums have been adopted; the discharges have been estimated at the same proportion to the estimated residents which the actual discharges bore in each year to the actual residents, and the deaths have been estimated from the probability of dying in a year calculated from the mean rate of mortality in the three years 1871-73. It has moreover been assumed that in each case the balance of admissions over discharges were in residence half a year, and so exposed to risk of death.

DISCUSSION *on* MR. HUMPHREYS'S PAPER.

DR. HACK TUKE rejoiced to find that the conclusions at which Mr. Humphreys had arrived, were so much in accordance with what might be regarded as an encouraging and satisfactory mode of viewing the great question of the alleged increase of insanity in England and Wales. For some years he (Dr. Tuke) had held the view that statistics did not prove the increase of occurring insanity, although at one period he was afraid that they did tend that way. It must be admitted perhaps, on the other side, that there was a considerable amount of nervous disorder which did not come under the registration of actually insane persons, but which must be regarded as of serious import. He thought that impressions apart from statistics, although exceedingly liable to mislead, taken in connection with the known causes of mental disorder now in operation, warranted one in being a little reserved in expressing an opinion whether these nervous disorders might not have increased. It was, however, a very satisfactory circumstance that an exhaustive investigation like that which Mr. Noel Humphreys had made, placed the Society in the position of being quite satisfied that statistics up to the present time do not authorise the statement that there has been any actual increase in mental disorder in England and Wales. Speaking of the class outside asylums and workhouses, which one must consider, he (Dr. Tuke) found while engaged in the inquiry he had recently made into the number of insane in his own county, Yorkshire, that there was a rather strong feeling among the medical superintendents that there were a number outside the asylums who might never come into them, suffering from a certain amount of mental degeneration. It was only fair that he should state this, though he still held that the statistical proof of an increase of occurring insanity was entirely wanting. With regard to Yorkshire, it had been stated within the last few years that there had been an actual increase in occurring insanity, that the rates of mortality and recovery had not materially altered, and that the accumulation could not therefore be accounted for on these grounds. But on working out these statistics, he found that taking Wakefield, which had been especially referred to as disproving the opinion that there was only an apparent increase of insanity, the mortality rate for the first decennial period after the opening of the asylum was 16.02 per cent., whereas between 1859 and 1868 it was only 14.5. In the following decade, 1869 to 1878, it was 10.7, and in the last decade 11.5. So that with regard to the Wakefield asylum the evidence distinctly favoured all that Mr. Humphreys had said as to the lower rate of mortality. Turning to the question of recoveries in the same institution, he found the recoveries during the first decade after the opening of the asylum were 45.10 per cent., whereas in 1859 to 1868 there were 40.5, and from 1879 to 1887

40·7 per cent.; the average being 42 per cent. since the opening to the present time. He thought therefore they were fully justified in stating that a large amount of the accumulation was due to the lower mortality rate—the prolongation of insane life—and the fact that the recovery rate had not increased, as it was hoped would be the case. With regard to the apparent increase of insanity by reason of the increased number of inmates of asylums (he was speaking of Yorkshire alone), he found that statistics did not in the least degree prove that there had been an increase of occurring insanity, but rather that there had been a transference from the workhouses and the residences of relatives and others to the asylums. Thus, of 100 pauper lunatics in Yorkshire in 1861, the number in asylums was only 59·4 per cent., while it is true it was as high as 72·16 per cent. in 1889. But in the former year 40·6 per cent. were in workhouses and with their friends, &c., while in the latter year there were only 27·8 per cent., showing a great fall in the relative proportion. Mr. Humphreys had referred to the statement he (Dr. Tuke) made some time ago in regard to “first attacks.” He felt with Mr. Humphreys that the Society was still far from having all the data on which to come to any conclusion as to occurring insanity, because, even if the source of fallacy arising from transfers and re-admissions were eliminated, and they had simply the number of first attacks in England and Wales before them, the admissions into workhouses and those cases under out-door relief were entirely omitted. He might say in passing, in proof of the value of the return of “first attacks,” although far from correct, that the proportion between first attacks and not first attacks during the two decades in which they had been returned to the Lunacy Board, was very uniform. Taking these first attacks admitted into the asylums of England and Wales from 1878, he found that in that year they were 3·337 per 10,000 living; in 1879, 3·345; in 1880, somewhat less, namely, 3·225; in 1881, slightly higher, 3·252; the same for 1882; in 1883, a rise to 3·435, while in 1884 the ratio fell to that of 1878, and was still lower in 1885, being 3·101; in 1886 it had risen 0·198, and 1887 to 3·332, a ratio lower by a small fraction than it was in 1878. The number of first attacks was therefore no higher at the end of the decade. Taking the statistics which he prepared for Yorkshire alone, he found that in 1868 the ratio of first admissions of pauper lunatics into asylums was 2·60 per 10,000 of the population, and that it rose with some fluctuations to 3·14 in 1887, showing a rise of 0·54, or 1 lunatic in 20,000 of the population; but this slight increase might fairly be attributed to the opening of several county asylums during the period embraced by the calculation. He attached, as would be gathered from his remarks, the greatest importance to what Mr. Humphreys had said in the concluding paragraph of his paper: “It is even still more essential to the definite solution of the problem under discussion, that provision should at once be made for obtaining trustworthy statistics concerning the annual admissions, discharges, and deaths occurring among the pauper insane retained in workhouses, and similar information relating to insane paupers in receipt of out-door

relief." When collecting lunacy statistics, he went to the Local Government Board and attempted to get these admissions, but was told that it was utterly impossible to supply them. The Lunacy Commissioners said the same thing. It was to be hoped that Mr. Humphreys's paper would stimulate those bodies to secure these statistics, which were essential to the Society in arriving at definite conclusions on the question before them.

Dr. G. H. SAVAGE said if there was one thing more than another that he did not know anything about in relation to insanity, it was statistics. His position had thrown him into connection with changing cases and modes of disease, comparatively few of which he could trace to an end. He felt in looking at the Lunacy Commissioners' returns, great satisfaction at finding what one felt to be true, namely, that there was no real or alarming increase of insanity. It seemed to be one of the bugbears of the age the idea that insanity was running like wildfire through the whole population. It was satisfactory to know from the facts brought before the Society by Mr. Humphreys and Dr. Hack Tuke, that there was no very grave cause for the alarm. On the other hand he felt the futility of collecting statistics, for it might be that though there was no great increase of insanity as insanity, the form of mental disorder was changing for the worse. Insanity being, as Dr. Tuke had said, a relative term, there are a large number of persons who are on the border land, who are or are not lunatics according to the convenience or affluence of their friends. The statistics with regard to the persons found lunatics and recognised as such by the Commissioners' report are of importance; but it is of still greater importance to remember that the forms of insanity differed greatly in their gravity. If, for instance, there were no increase in the number of the insane, but if the form of insanity was getting worse, then there would be cause for very much greater alarm than if the numbers were not increased and the form of insanity was worse. It was his opinion that the form of insanity was worse, but unfortunately he was not in a position to back it up with statistics. The addition of new statistical tables was endless, and each new one suggested others. The Commissioners had enough to do in preparing the present tables, and if more were required of them, that hard worked body would be driven to strike.

Mr. FREDERICK HENDRIKS (Vice-President), remarked that he was especially interested in those figures in Mr. Humphreys's paper that bore upon the question of the respective degree of insanity according to sex. The figures indicated about 11·2 per cent. more insanity amongst females than amongst males in the population at large. He had lately been looking into the most recent lunacy statistics of France, and in the figures of the comparatively larger number of females than of males in asylums, they were in exact agreement with those of Mr. Humphreys, which did not, however, give the ratios borne by each sex in the asylums, to the female and male populations of the country respectively.

Subject as they were to correction on this account, they gave ground for estimating that it would be found that in round figures the comparative insanity was about 10 per cent. higher amongst the female, than amongst the male, population in both countries. This was somewhat remarkable, and appeared to point to the fact (which perhaps some of the medical gentlemen present on this occasion might confirm), that insanity should be classed as much more a congenital, than an accidental, disease. It appeared at first sight that the specific amount of lunacy was higher in England than in France, but so far as figures can guide us, the increase in the number of lunatics in France had gone on in recent periods of years at a more rapid rate than in England. It was difficult also to judge whether a common factor existed, as the definition of the degree of insanity which would involve confinement in an asylum, might be different in the two countries. Besides which, we ought to look in both instances to some statistics, either wanting or not included in the returns, of the relative numbers of admissions of lunatics into asylums, as after all the mere enumeration of the population of the asylums for the insane at any given date, would not give a measure of comparison of exact increase or decrease, or of relative proportion of insanity, as it would be affected by the different ages at admission, and by any alterations in the mortality of the inmates of those asylums, which would of course leave a lesser or a greater number of survivors according to special circumstances.

Mr. T. H. ELLIOTT asked Dr. Savage whether he was to be understood as saying that the present form of insanity was of a more vicious description now than formerly?

Dr. SAVAGE said that was his impression. He felt it was a pity that he had at present no definite statistics to which he could appeal to prove that. It would certainly be a much more serious matter if it were true that the form of insanity was more fatal than if there were a slight increase.

Dr. G. B. LONGSTAFF said there was one part of the subject to which discussion had not been invited, namely, the relation of insanity to different classes of the population. It was quite conceivable that insanity as regarded the whole mass of the population might not be increasing, whereas it might be increasing in a certain class. It was conceivable that town populations or certain classes in towns might be suffering deterioration, and might consequently be suffering more from insanity. He (Dr. Longstaff) presumed the statistics given by the Lunacy Commissioners were derived from the Poor Law authorities. It must be familiar to Mr. Humphreys that pauper lunatics were not necessarily residing in the parishes to which they were liable, as the practice of boarding out lunatics in other asylums was a very common one. Another difficulty arose with regard to the personal equation of the committees of management. It rested very largely with the committee of management of an asylum (and more or less with the medical officer) to discharge

patients. Large numbers of patients had been discharged owing to changes in the committees of management. It was always open to considerable doubt whether certain cases would be better treated in their own homes or not. For all statistical purposes these lunatics might be lost sight of in their own homes. It was not germane to the subject of the paper, but he had hoped that Mr. Martineau, the Chairman of the Lunatic Committee of the London County Council, would have been present. Mr. Martineau would have told the meeting that whatever the cause, whether insanity were increasing more rapidly than the population or not, as a matter of fact the increase of lunatics chargeable to the county of London was something like 250 per annum, which meant a new asylum to contain 100 patients every four years. Taking into consideration the fact that there was a constantly rising standard of excellence in these asylums, and that every asylum would be more costly to erect and maintain than its predecessors, that was a very serious matter for the ratepayers.

Mr. J. PEEKE RICHARDS (Superintendent of the Female Department of the Hanwell Lunatic Asylum) said the increase in the number of lunatics in the county of London was very easily accounted for by the fact that so many people had to be accommodated from all parts of England. People gravitated to London, became insane in London, and were classed as lunatics in London. In a very short time they were made chargeable to their respective counties and sent back. In reference to the statistics of Dr. Farr, derived from the Hanwell Asylum in 1839, there were absolutely no records in connection with that institution for the first few years, and he failed to see where Dr. Farr could have got his statistics from. With reference to "first attacks," he might point out that most of the statistics which were quoted by the Commissioners in Lunacy were sent up by the different medical officers of the county asylums. The facts so sent up could only be derived from the histories of friends who visited the lunatics, the facts supplied on the admission order being so meagre and so indifferently supplied by the relieving officer, that they were absolutely untrustworthy. In the case of only 40 or 45 per cent. of the cases admitted into Hanwell Asylum, could any history or decided facts be obtained. The superintendents sent returns every year to the Commissioners in Lunacy of all the cases that were not transfers. They had also to report as to whether they were first attacks. He (Mr. Richards) made out these returns for the female department of the Hanwell Asylum, and in cases of which no history was given, he gave the patients the benefit of the doubt, and said they were "first attacks." Mr. Humphreys had said it was a pity the Commissioners in Lunacy did not give the age at which the patients died, as these facts were supplied to them. He (Mr. Richards) did not think that was the case: the statutory form sent to the Commissioners on the death of a patient did not say a word about age.

Dr. H. HAYES NEWINGTON thought that the point most interesting, from a social point of view, was the proportion which fresh

insanity, as shown by the yearly number of admissions, bore to the population. The figures concerning the admissions were, he owned, far from exact and conclusive, but he ventured to put forth a few considerations, not exactly statistical, which arrived at the same conclusion as that of Mr. Humphreys's paper. Upon examination of the tables issued by the Commissioners in Lunacy for several years past, he had been struck by the important fact that insanity in its march had laid down certain laws for itself, which it followed with very considerable constancy. This proposition he illustrated in various ways. He showed that the proportions in fresh cases of mania, melancholia, epilepsy, and general paralysis varied but a few points from year to year, even when arranged as to sex and social standing. So too the fresh cases were taken from various professions and callings in the same ratio year after year, even when the ratio of the class differed considerably from the total ratio of occurring insanity (roughly 1 to 2,000 of the population). This was particularly the case with definite callings, *e.g.*, carpenters, tailors, &c. Hatters, curiously enough, did not conform to rule. Then the proportions of assigned causes of insanity differed little—even sunstroke and accident bringing about nearly the same amount each year. Yet again, the presence of suicidal tendency in cases admitted was shown each year in about the same proportion. If then fresh certified insanity was so constant to itself, was it too much to infer that uncertified insanity was also constant, and bore a certain proportion each year to the former? If this could be granted, then the former would be the guide to total proportionate occurrence of insanity, certified or uncertified. He showed that while 5·15 cases of occurring insanity to every 10,000 of the population was the mean ratio for the last fifteen years, the proportion for the last year was 5·16, while the two or three preceding years were below the mean. Therefore he would say that what evidence there was went rather to prove that the amount of occurring insanity was almost stationary.

The PRESIDENT proposed a vote of thanks to the reader of the paper, which was carried by acclamation.

Mr. NOEL A. HUMPHREYS returned his best thanks to the President and the Fellows for the favourable way in which they had received his paper. In reply to Mr. Hendriks, he pointed out that the proportions given in his tables were calculated with due regard to the population of each of the two sexes, adding that the increased rate of existing insanity among females was undoubtedly due to the greater longevity of the female sex. It was true the rate of recorded insanity in England was higher than in France; but having regard to Dr. Lunier's paper read before the Statistical Society of Paris in 1884, he had no doubt that the higher rate in England was more apparent than real, the English figures being very much more complete than the French, which were almost entirely confined to the inmates of asylums. Dr. Longstaff had pointed out a probable source of statistical error in the fact that lunatics belonging to one county were often farmed out in an

asylum not belonging to that county; but he (Mr. Humphreys) assumed (and he had no doubt it was the case) that this source of error was well known to the Lunacy Commissioners, and that the necessary corrections were made in their figures. He could assure Mr. Richards that the facts used by Dr. Farr were based on returns most laboriously collected and placed at his disposal by Dr. Conolly, then Superintendent of Hanwell Asylum. He was quite sure that if Mr. Richards would read Dr. Farr's paper he would come to the conclusion that it could only have been compiled after a most careful examination of facts, the records of which existed at that time, even if they no longer exist, in the archives of Hanwell Asylum. No doubt he (Mr. Humphreys) was in error with regard to the statement of ages at death of patients in asylums, and Mr. Richards was correct in saying that the returns made to the Commissioners did not include the age at death. That was so obviously a defect that, having been pointed out, ought to be rectified, because without the age at death it was impossible to calculate a trustworthy death-rate. He hoped the discussion would result in the compilation of more complete statistics relating to the insane in workhouses and in receipt of out-door relief.

*On MARRIAGE-RATES and MARRIAGE-AGES, with SPECIAL REFERENCE
to the GROWTH of POPULATION.*

By DR. WILLIAM OGLE, M.A., F.R.C.P., &c.

[Read before the Royal Statistical Society, 18th March, 1890.
The President, Dr. T. GRAHAM BALFOUR, F.R.S., in the Chair.]

THERE are men who toil because work is a pleasure to them, and there are others who toil because work is a duty; but the great majority of mankind are only stimulated to labour, that in amount or character is distasteful to them, by the hope that they may be able, in the first place, to maintain themselves, and secondly to marry and maintain a family in that degree of comfort which they have come to regard as necessary. If, therefore, the well-being of a State consists in the material well-being of the people, a country is then most flourishing when the largest proportion of its population is able to satisfy these two natural desires; and thus the fluctuations from year to year in the marriage-rate become a fair measure of the ebb and flow of material prosperity; the fluctuations, be it noted, from year to year, not the differences presented by the rate at longer intervals. For when such longer periods are taken, there is an interfering cause which may very possibly vitiate the comparison. You cannot, for instance, say that because the marriage-rate in England and Wales was 17·5 per 1,000 in 1865, and only 14·4 in 1885, the people were worse off at the latter than at the former date. For the standard of comfort may have changed, and indeed doubtlessly had changed, very considerably in the interval, and men, who in 1865 may have thought themselves justified in venturing on matrimony when they had a fair prospect of a certain amount of earnings, may at the latter date have come to consider such an income as utterly inadequate for the proper support of a family. But such changes in the general standard are only brought about gradually, and consequently the fluctuations in the rate from year to year are not liable to this cause of fallacious interpretation. In this paper, therefore, the rate for any year will be compared with that of the year next preceding; and when the rate is said to have risen or fallen, it will be meant that it was higher or lower than the immediately preceding rate, and not that it was higher or lower than the preceding average.

Having made these few preliminary remarks, let me now call

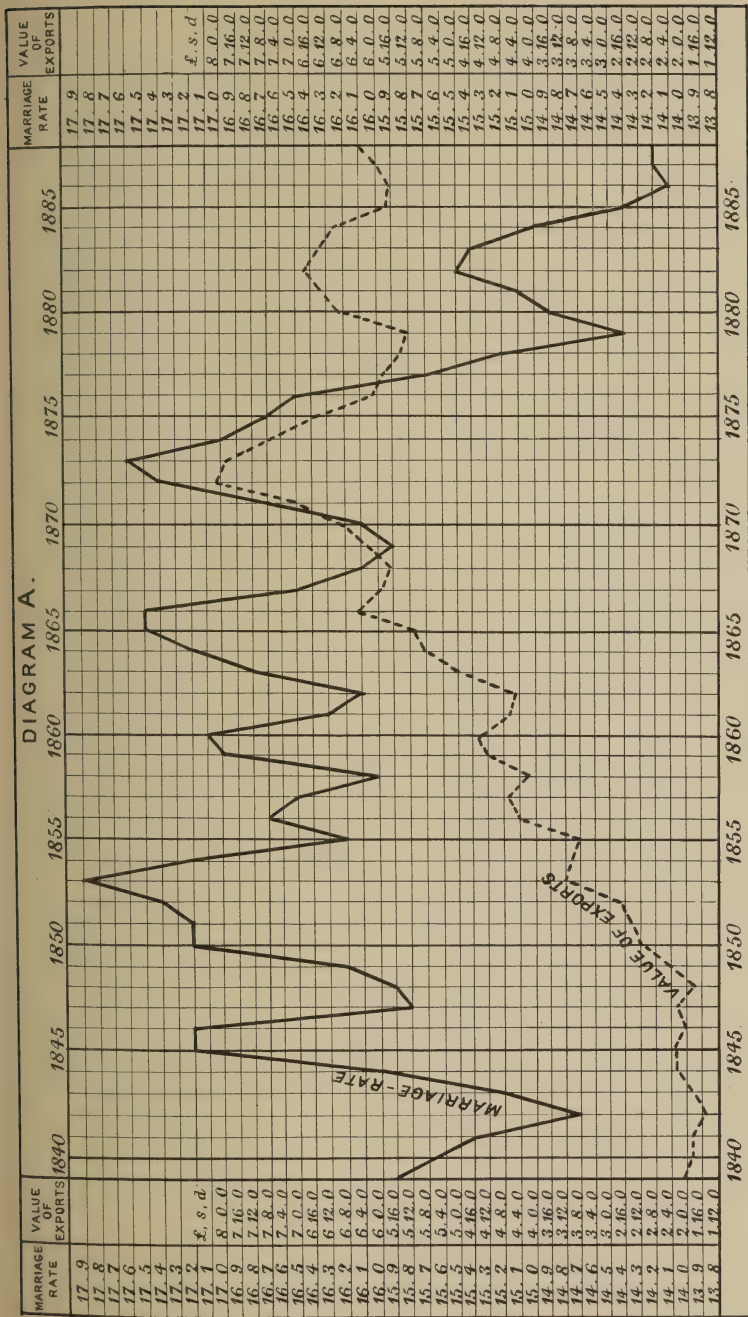
your attention to the figures in Col. 2 of Table A, or to the diagram which follows it (Diagram A), the table giving the marriage-rate, that is the proportion of persons married¹ in the year to 1,000 population, for each year since 1820; while the diagram shows the same facts graphically for the years since 1839, inclusively, that is for all the years since civil registration began, and rates could be more accurately determined:—

TABLE A.

Year.	Marriage-Rate.	Average Price of Wheat.	Value of British Exports per Head of Population.	Year.	Marriage-Rate.	Average Price of Wheat.	Value of British Exports per Head of Population.
		<i>s. d.</i>	<i>£ s. d.</i>			<i>s. d.</i>	<i>£ s. d.</i>
1820....	16'3	67 10	1 11 5	1855	16'2	74 8	3 8 10
'21....	16'7	56 1	1 14 11	'56	16'7	69 2	4 2 10
'22....	16'1	44 7	1 14 7	'57	16'5	56 4	4 6 7
'23....	16'3	53 4	1 12 9	'58	16'0	44 2	4 2 5
'24....	16'5	63 11	1 14 11	'59	17'0	43 9	4 11 2
'25....	17'1	68 6	1 14 11				
'26....	16'1	58 8	1 7 11	1860	17'1	53 3	4 14 5
'27....	16'2	58 6	1 12 6	'61	16'3	55 4	4 6 4
'28....	16'5	60 5	1 11 9	'62	16'1	55 5	4 4 10
'29....	15'3	66 3	1 10 6	'63	16'8	44 9	4 19 6
				'64	17'2	40 2	5 8 1
1830....	15'6	64 3	1 12 2	'65	17'5	41 0	5 10 10
'31....	16'0	66 4	1 10 10	'66	17'5	49 11	6 5 4
'32....	16'5	58 8	1 9 10	'67	16'5	64 5	5 19 —
'33....	16'8	52 11	1 12 3	'68	16'1	63 9	5 17 1
'34....	16'8	46 2	1 13 3	'69	15'9	48 2	6 2 8
'35....	16'2	39 4	1 16 11				
'36....	16'2	48 6	2 2 —	1870	16'1	46 11	6 7 8
'37....	15'1	55 10	1 12 10	'71	16'7	56 8	7 1 5
'38....	15'4	64 7	1 18 8	'72	17'4	57 —	8 — 10
'39....	15'9	70 8	2 — 8	'73	17'6	58 8	7 18 7
				'74	17'0	55 9	7 7 5
1840....	15'6	66 4	1 18 9	'75	16'7	45 1	6 16 1
'41....	15'4	64 4	1 18 6	'76	16'5	46 2	6 — 10
'42....	14'7	57 3	1 15 —	'77	15'7	56 9	5 18 6
'43....	15'2	50 1	1 18 4	'78	15'2	46 5	5 13 8
'44....	16'0	51 3	2 2 6	'79	14'4	43 10	5 11 8
'45....	17'2	50 10	2 3 3				
'46....	17'2	54 8	2 1 3	1880	14'9	44 4	6 8 10
'47....	15'8	69 9	2 2 1	'81	15'1	45 4	6 13 11
'48....	15'9	50 6	1 18 —	'82	15'5	45 1	6 16 10
'49....	16'2	44 3	2 5 11	'83	15'4	41 7	6 14 8
1850....	17'2	40 3	2 11 10	'84	15'1	35 8	6 9 7
'51....	17'2	38 6	2 14 4	'85	14'4	32 10	5 17 3
'52....	17'4	40 9	2 16 11	'86	14'1	31 1	5 15 9
'53....	17'9	52 3	3 11 10	'87	14'2	32 6	5 19 5
'54....	17'2	72 5	3 10 3	'88	14'2	31 10	6 4 11

¹ The marriage-rate may be expressed in two ways, either by giving the proportion of *marriages* or of *persons married* to 1,000 living. The rate by the latter method is of course double the rate by the other; and is the rate used in the official reports for England and Wales, and in this paper.

DIAGRAM A.



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The figures and the diagram show that the marriage-rate has fluctuated in a very irregular manner, the line of the curve presenting a number of successive waves, differing from each other very greatly, both in length and in altitude. To what causes have these fluctuations been due?

Let us first briefly consider the effect of such great national catastrophes as war, pestilence, and famine.

The effect of war, removing as it does a considerable number of men of marriageable ages from the country, and interfering largely, moreover, with the industries of those who are not actually engaged in the struggle, is, as might be anticipated, to bring down the marriage-rate; but the extent of this reduction will of course vary according to the proportions which the war assumes, and according as the seat of war is abroad or in the country itself. Luckily, our own country has never been the actual seat of war since civil registration began, nor have our wars abroad been waged on the gigantic scale of other nations in modern times. Moreover, our armies have been constituted mainly of men who even in times of peace are debarred by the rules of their service from matrimony. Consequently, the effects of our wars upon the marriage-rate have been comparatively insignificant, and to find good examples of such effects we must go to the records of other nations. These records show that war depresses the marriage-rate enormously, but that, as soon as the war is over, the rate not merely recovers its former level, but rises temporarily to a much higher point than it had reached before, the rebound being almost, if not quite, invariably so great as fully to make up for the temporary depression. This recovery is to be explained by the fact that the population after a war will, owing to the cessation of marriages during its continuance, contain a larger proportion of unmarried persons of marriageable ages than usual, and also to the fact that numerous intended marriages will have been simply postponed, and not actually broken off, by the war. A few examples may be given. In 1864 Denmark was at war with Prussia, and its marriage-rate fell from 15·0 to 11·3, the lowest point it has ever yet reached, but in the next year, the war being over, rose to 17·8, and was higher than it has ever been again. In 1866 Austria was at war with Prussia, and, while the Prussian rate fell from 18·2 to 15·6, the Austrian rate fell from 15·5 to 13·0, but on the cessation of hostilities, rose in 1867 to 19·3, a higher level than in any earlier year. In the great war of 1870-71, the Prussian rate fell from 17·9 in 1869 to 14·9 in 1870, and 15·9 in 1871, but in the two years after peace was made rose to 20·6 and 20·2, the two highest rates recorded in that country. Similar changes occurred simultaneously in France, the rate falling from 16·5 before the year to 12·1 and 14·4, and then, war

over, rising to 19·5 and 17·7, the two highest French rates as yet recorded.

In our own country the effects of war upon the marriage-rate are happily, for reasons already given, not so conspicuous as in these foreign instances. Still, even in our own records, the effects can be plainly seen. The Crimean war began in 1854, and ended in 1856, and was followed in 1857 by the Indian Mutiny, which was finally suppressed in the beginning of 1859. Throughout this period of five years the marriage-rate remained depressed, but not to any great extent, nor was the recovery that followed in 1859 and 1860 on anything like the scale of the foreign examples which I have given. The rate in the year when the war commenced was 17·2, and fell during its continuance and that of the mutiny, to 16·2, 16·7, 16·5, and 16·0; and then, the troubles over, rose to 17·0 and 17·1.

If the effects of war are but little reflected in our marriage-rates, still less visible are those of pestilence or famine. Such epidemics as appear amongst us from time to time, though terrible enough to those immediately concerned, yet as a matter of fact involve but a small proportion of the population, and neither in the cholera years, nor in the small-pox years is any falling off to be seen in the marriage-rate; and as to famine, we have had luckily as yet no experience in this country.

But though we are free from famine, we have considerable fluctuations from year to year in the abundance of food; and it is by these fluctuations in abundance, as measured by the changes in the price of wheat, that economical writers have been in the habit of explaining the fluctuations in the marriages. As the bulk of the population consists of the artisan and labouring classes, it is of course on the number of their marriages that the rate practically depends, and it would seem highly probable *a priori* that the price of food should be the main element in the comparative well-being of these classes. "According to all experience," says² J. Stuart Mill, "a great increase invariably takes place in the number of marriages in seasons of cheap food and full employment;" and similarly Mr. Fawcett writes in his "Manual of Political Economy,"³ "There is no surer test of the prosperity of the labouring class than the low price of bread, and there are few statistical facts better substantiated than that the marriages among the labouring class increase with the fall in the price of bread." Unfortunately neither these writers, nor those other authorities in political economy who have made similar statements, give, so far as I have been able to ascertain, the actual figures on which their statements are based; so that it remains doubtful whether they have themselves personally examined into the facts,

² "Political Economy," II, xi, sec. 2.

³ Sec. 3, 6, p. 78.

or whether they have merely adopted, without personal investigation, an article of general belief. But this can at any rate scarcely have been the case with that distinguished statistician, my official predecessor, Dr. Farr. Writing in the eighth annual report of the registrar-general, Dr. Farr says: "Years of plenty are years of prosperity for the people, and the marriages increase, with few exceptions, when provisions are cheap." Of course, Dr. Farr, did not suppose that the sole cause which acted upon the marriage-rate was the abundance or the dearth of food. He fully recognised that there were other causes in operation, such as high or low wages, and the states of war or peace, and that these several causes admit of various combinations, that they sometimes neutralise each other, and that the marriage-rates express the combined result of them all. Still the words I have quoted, that "the marriages increase with few exceptions when provisions are cheap," show, I think, conclusively that at the time when he wrote them he regarded the price of food as the main determining cause, which only in exceptional cases was counteracted by other influences. Dr. Farr cannot possibly have based this opinion upon the experience of the seven years that had intervened between the first establishment of civil registration and the time when he wrote the eighth annual report; for not only were those few years quite insufficient as a basis, but as a matter of fact their evidence, so far as it went, was against his conclusion; for out of those seven years there were no less than five in which the marriage-rate rose and fell concomitantly with a rise or fall in the price of wheat, and only two in which the supposed inverse relation existed.

Neither can Dr. Farr have based his conclusion upon the evidence of the marriage-rates as calculated from the data collected by Mr. Rickman, for the years before civil registration began; for, as may be seen in the figures in Table A, their evidence is also against him. Going back as far as 1820, there were many more years in which the marriage-rate varied directly with the price of wheat, than there were years in which the two varied inversely. But in this Society, at any rate, we may feel pretty sure that Dr. Farr was not writing without facts to support him, and seeing how distinctly he states his conclusion, and seeing, moreover, that this conclusion tallies with that expressed by such economical authorities as Mill and Fawcett, we are, I think, justified in supposing that the data on which the opinion was based were derived from foreign sources, and in this supposition I am confirmed by finding that that indefatigable statistician, Signor Bodio, writing in 1876,⁴ after stating that in certain foreign countries

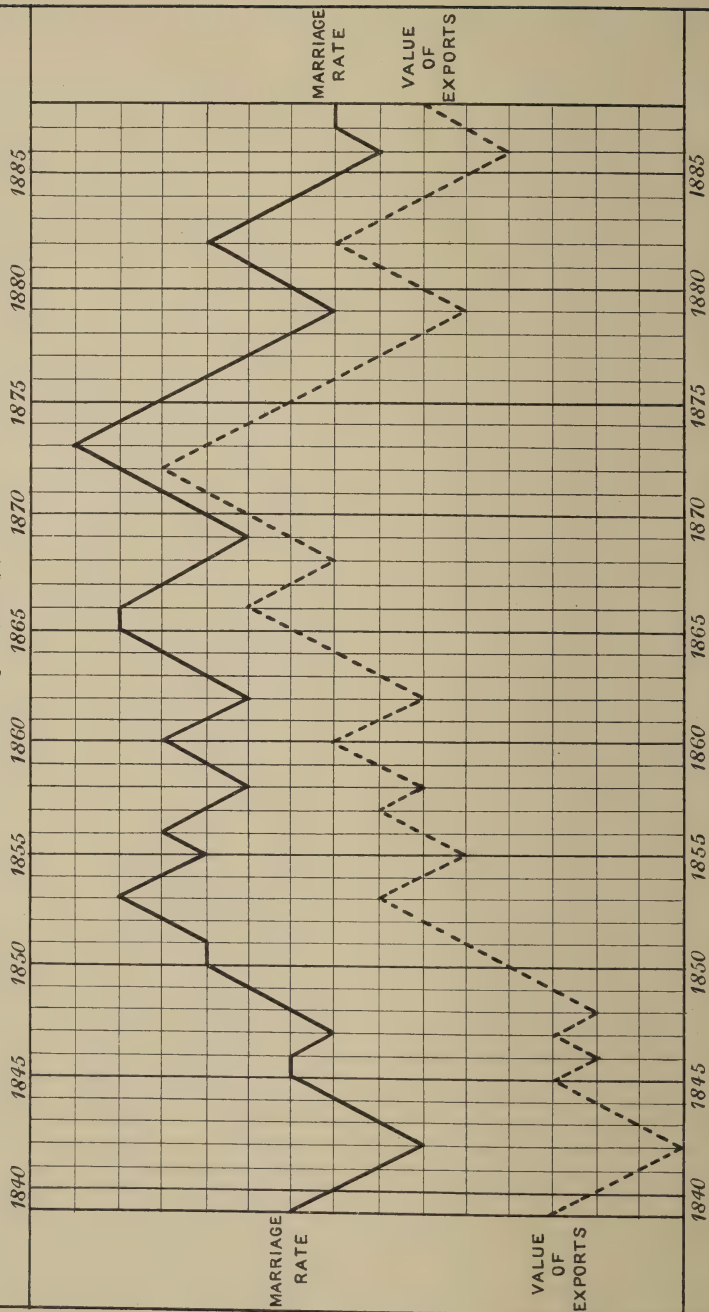
⁴ "Del Movimento della Popolazione in Italia e in altri stati d'Europa," 1876, pp. 136 and 137.

there was an inverse relation between marriage-rates and the price of food, goes on to say that he had been unable to detect any similar condition of things in the English records.

Most assuredly no such relation exists. Indeed the relation between the two is the very opposite. The marriage-rate varies not inversely but directly with the price of wheat. In recent years, that is to say in the last twenty years or thereabouts, this direct relation has been almost invariable, and though, in the years before that the direct relation was not so constant, yet even then there were many more years in which the rate and the price rose and fell together, than there were years in which the two moved in different directions. On this direct relation, however, I will not now insist; I shall have to return to it again. For the present it will be enough to say that while in some foreign countries, and very possibly in our own country in far removed times, marriages increase when food is cheap, and decrease when it is dear, no such phenomenon is presented in our records, at any rate so far back as the figures go in Table A, that is as far back as 1820. How is this difference between different countries to be explained? It appears to me to be only explicable on the supposition that there is or has been a wide difference in the general standard of comfort of the labouring classes in the different countries. When the standard of living is extremely low among the working classes, the question of marrying or not marrying is decided simply by the possibility of getting sufficient food, and consequently the price of food is then the main factor in determining the marriage-rate; but, when the standard of living has been considerably raised, mere sufficiency of food is no longer held to be an adequate justification of marriage, and consequently the price of wheat ceases to be the one determining factor, and becomes quite subordinate to the amount of wages. This however only explains why marriages do not increase in this country when food is cheap; it does not explain why they increase when food, or rather when wheat, is dear. But to this I shall revert presently.

If then the changes in the cost of food will not explain the fluctuations in the marriage-rate, what better explanation can we find? Or what is the best standard we can obtain by which to gauge those fluctuations in the well-being of the working classes which influence them in the matter of marriage? Of late years it has been customary in the annual reports of the registrar-general, to put side by side with the successive marriage-rates not only the price of wheat, but several additional series of figures representing the changes in sundry accepted measures of national prosperity, such as the value of imports and of exports, and the amount of money cleared at the bankers' clearing house.

DIAGRAM B.



To these might be added other tests, such as the amount of pauperism, and the prices of other commodities than wheat; but the series in which the changes have been found to synchronise most closely with the changes in the marriage-rate is that which gives the value of British exports per head of the population; and I would therefore again call your attention to Table A; there you will find these values given side by side with the marriage-rate, for each year since 1820; or perhaps, as it is difficult to compare rapidly two series of figures, it will be better to refer to Diagram A, in which the changes in the marriage-rate and in the export values since 1838, when civil registration began, and the rates became more trustworthy, are graphically represented; the curve for the marriage-rate being the upper line, while the lower line is the curve of export values.

At first sight the two curves seem utterly unlike each other, especially in their earlier portions; the lower line showing, with many comparatively small irregularities, a continuous rise up to 1873, while the upper line shows no such general ascent, but a series of irregular waves. But, on further examination, it will be seen that under this striking dissimilarity there are hidden many notable points of agreement. The waves in the one line coincide invariably with waves in the other, the highest and lowest point in each wave coming moreover almost always in precisely the same years in the two. The years 1846, 1853, 1856, 1861, 1867, 1873, and 1883, each form an apex of a wave, or wavelet, in each line; while 1843, 1848-49, 1856, 1858, 1863, 1869, 1879, and 1887, are in each curve years when a wave is at its lowest. In short, the fluctuations in the two curves coincide almost exactly in position, though they differ very widely in their relative sizes. This is most clearly seen if we altogether ignore the size of the fluctuations and restrict our attention to their directions, as is done in Diagram B, where the line simply shows the direction, up or down, in which the marriage-rate and the value of British exports per head of population have moved from year to year. The two curves are almost identical. The diagram shows the changes from 1839 to 1888, fifty years altogether. In all these years there are only five, namely, 1847, 1848, 1857, 1869, and 1873, in which the marriage-rate moved in a different direction from the export values; there are three years in which the rate remained unchanged, while the exports rose or fell; while in all the remaining years the two rose or fell together.

Even some of the five exceptions are simply due to the fact that occasionally the rise in the marriage-rate does not exactly synchronise with the rise in exports, but follows at a short interval, so that the rate goes up in the year after the rise of exports, not in

the year of the rise itself. This is seen by looking at the years 1869 and 1873 in the diagram.

The marriage-rate then goes up and down synchronously with the value of exports. This can clearly only be because the changes in these values are an indirect indication of corresponding changes in the employment and the wages of the labouring classes; and it would be desirable to obtain, if possible, some more direct measure of these latter changes. Hunting about for such a measure, I lighted, in the labour statistics of the Board of Trade, upon the annual returns made by certain trade unions, in which were given for a series of years the number of members on the books at the end of each year, and also the average monthly number of such members who were in receipt of benefit as being out of employ:—

TABLE B.

1	2	3	4	5
Year.	Members of the Unions at end of Year.	Average Monthly Numbers on Unemployed Benefit.	Proportion of Unemployed per 1,000 Members.	Marriage-Rate in England and Wales.
1867	55,721	4,282	77	16·5
'68	55,656	4,963	89	16·1
'69	55,398	4,554	82	15·9
1870	57,494	2,627	46	16·1
'71	61,514	1,132	18	16·7
'72	67,291	718	11	17·4
'73	84,365	1,144	14	17·6
'74	88,366	1,658	19	17·0
'75	92,467	2,638	29	16·7
'76	95,787	4,113	43	16·5
'77	99,446	5,157	52	15·7
'78	98,582	7,257	74	15·2
'79	95,596	13,957	146	14·4
1880	96,919	6,592	68	14·9
'81	102,175	3,925	38	15·1
'82	113,482	2,322	20	15·5
'83	119,640	2,894	24	15·4
'84	122,941	10,475	85	15·0
'85	124,642	12,765	102	14·4
'86	122,444	13,851	113	14·1
'87	120,748	10,518	87	14·2
'88	124,238	6,595	53	14·2

Combining the figures in the reports of these several unions into an aggregate, I obtained the results which are given in Col. 4 of Table B. In that column you have the proportion of unemployed per 1,000 members for each year from 1867, and side by side in the next column you have the marriage-rate for England

and Wales. If you compare the two series of figures, you will see that there is a very close correspondence between their respective fluctuations. When the proportion of unemployed increases, the marriage-rate declines; when the proportion falls off, the marriage-rate goes up. In the whole series of years in the table there are only two in which the contrary is the case. In one of these the marriage-rate remained stationary, though the unemployed fell off in numbers; leaving in all the remaining nineteen years only one occasion in which the marriage-rate and the proportion of men out of work moved in opposite directions. Again, the five years in which the marriage-rate was lowest were 1879, 1885, 1886, 1887, and 1888, and in four of these years the proportion of men out of employ was highest. So also the five years in which the marriage-rate was highest were 1871, 1872, 1873, 1874, and 1875, and these were also the five years in which the proportion of unemployed was lowest.

The unions for which I was able to get the requisite data were very few in number, and represent a very limited range of industries; none of the great textile, nor the mining industries, nor the agricultural, nor the shopkeeping population being included, and the total number of members in the unions in no one year reached an aggregate of 125,000; and yet the fluctuations in the amount of employment in these few trades, and in this limited number of men, are found to be actually a very close index of the fluctuations in the marriage-rate of the whole country. This seems to me a most striking phenomenon, indicating as it does an amount of sympathy between all the various industries, for which I confess the familiar statement, that no one part of the social body can suffer without the rest also being affected, had not prepared me. But we may even go farther, and find still more striking evidence of this solidarity of industries, by taking a still smaller sample than is given by this limited number of trade unions, with their 125,000 members, and confining ourselves to a single, and that a very small union. Among the trade unions which form the little aggregate I have dealt with is the "Glass Bottle Makers of Yorkshire United Trade Protection Society." In no one year has the number of members of this little society been as many as 1,600; and yet I find that the fluctuations in the employment of this minute body of men correspond closely in their directions with the fluctuations in the marriage-rate of the entire country; so that the oscillations in the prosperity of this small trade become a faithful index of the prosperity of the country at large. How close the correspondence is may be judged from the fact that in the course of eighteen years, from 1870 onwards, only three times did the change in the marriage-rate of England and Wales fail to tally in its direction

with the change in the amount of employment in this small local industry.

The conclusions then at which we arrive, so far as we have yet gone, are these: that the fluctuations in the marriage-rate follow the fluctuations in the amount of industrial employment; and secondly, that the various industries are so solidly bound together, that the changes in even a single and a small one afford a very close index of the changes in the whole of them.

Let us now go back for a moment to the price of wheat and its relation to the marriage-rate. I have shown that the ordinary statement that men marry when wheat is cheap is not true, at any rate for this country, and I said that as a matter of fact in recent years the very opposite has been the case, and that marriages have been most numerous when wheat has been dear, or rather that the marriage-rate has gone up when the price of wheat has increased. That men should be more inclined to burden themselves with a family at a time when the necessaries of life are dear, and less ready to do so when food is cheap, seems so paradoxical a statement, that it is necessary before seeking for its explanation to show that it is an actual fact. Let me then again call your attention to Table A, where are given the marriage-rates and the price of wheat for a series of years, and let us confine ourselves to the years beginning with 1871. Since that date the average annual price of wheat has gone down on ten occasions below the price of the next preceding year, namely in 1874, 1875, 1878, 1879, 1882, 1883, 1884, 1885, 1886, and 1888, and in no less than eight of these ten years the marriage-rate has followed suit; while in one (1888) of the remaining two years it remained stationary, thus leaving only a single occasion (1883) when wheat fell and marriages increased, and it will be noted that in that exceptional year the fall in wheat was excessively small, only 4*d.* per quarter. On the other hand there are eight years, 1871, 1872, 1873, 1876, 1877, 1880, 1881, and 1887, in which the price of wheat rose above that of the preceding year, and in six of these eight years the marriage-rate also rose, 1878 and 1879 being the only exceptions.

Such a coincidence as this cannot possibly be only casual, and the apparent paradox of increased marriages with dearer food, and diminished marriages with cheaper food, requires explanation.

The explanation which I would offer is this. Men marry, as we have seen, in greater numbers when trade is brisk, and when the value of exports increases; but when the exports increase, so also do freights, and this rise in freights causes a corresponding rise in wheat, the largest part of our wheat being imported from abroad. The fact that the proportion of our wheat supply that is

derived from abroad has been increasing, explains why it is that the direct relation between the marriage-rate and the price of wheat has been much more distinctly marked in recent years, say since about 1870, than it was in earlier periods.

In conclusion then the marriage-rate rises and falls with the amount of industrial employment, which in its turn is determined by the briskness of trade, as measured by the values of exports, which also rise and fall concomitantly, and produce by their effect upon freights a simultaneous rise or fall in the price of wheat.

We have now to consider how it comes about that, while the fluctuations in commercial and industrial activity, as measured by the export values, produce corresponding fluctuations in the marriage-rate, the correspondence is, as we have seen, only in the directions and not in the proportional magnitudes of the waves these magnitudes differing indeed so enormously in the two cases, that the curves representing respectively the values and the rates come to have the utterly different contours shown in Diagram A.

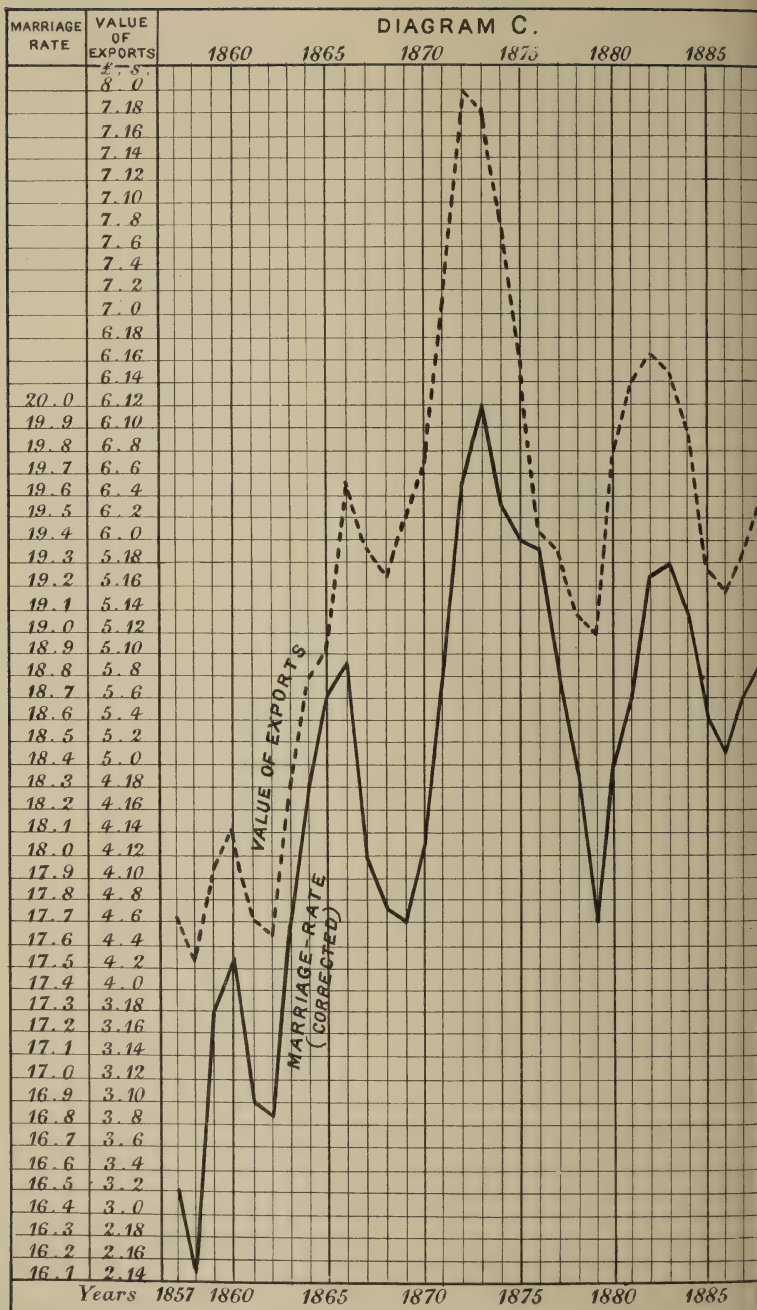
In the first place it is manifest that a cause which only affects the prosperity of a part of the population, or affects the prosperity of one part to a greater extent than it affects the prosperity of the remainder, cannot possibly bring about waves in the marriage-rate of the whole body that will be proportionate in size to its own fluctuations; and the cause we have been considering, namely industrial and commercial activity, clearly affects the manufacturing much more than the agricultural classes. A change which doubled, let us say, or halved in any year the marriage-rate of the industrial classes, while it left untouched that of the agricultural classes, would clearly not double nor halve the marriage-rate of the whole population; and the degree in which it failed to do so would of course depend upon the proportions in which the industrial and the agricultural elements were represented in the aggregate population. The smaller the proportion of the agricultural element, the less interference would it cause, and the closer should be the correspondence between the fluctuations of the marriage-rate of the whole population and the fluctuations in the export values as measures of industrial prosperity. Now the proportion of the agricultural to the industrial element in this country has for many years been getting smaller and smaller, the rural population having remained stationary, or even slightly declined, while the urban or industrial population has enormously increased. Consequently we ought to find that the fluctuations in the marriage-rate have been getting nearer and nearer into accord with the fluctuations in the export values; and if you look at the curves in Diagram A, you will see that this has in fact been the case. The curves up to somewhere about 1868 are as different in their

general contour as can be, while in the years since then they have become recognisably similar in aspect. This increasing similarity is explained by the increasing preponderance of the industrial over the agricultural population.

It seems however scarcely probable that the great divergence of the marriage curve from the export curve can thus be adequately explained; and the divergence would seem to require for its explanation the existence of some constantly increasing influence which has tended to cause depression; and I think I shall be able to show, at any rate in an approximate manner, to what extent this unknown influence has acted in a downward direction for a series of years.

In 1888 the value of British exports per head of population was, as shown in Table A, 6*l.* 4*s.* 11*d.*; and going back it will be seen that the value was practically the same in 1866, the difference being only a few pence. Clearly then if the marriage-rate were determined simply by the export values, the rates should have been practically identical in these two years. But nothing of the kind was the case. The rate in 1866 was 17·5 per 1,000, while in 1888 it was only 14·2, a fall of 3·3. This fall then of 3·3 in the twenty-two years from 1866 to 1888, must have been due to something else than changes in export values, which remained unaltered. We have thus procured some kind of measure of the effect upon the marriage-rate of the supposed depressing influence which interferes with the action of the export values. It has reduced the rate by 3·3 in twenty-two years, and we may assume that consequently it would have caused a reduction of 4·65 in thirty-one years, that is in the interval going backwards between 1888 and 1857, which latter year I take as my starting point, as being the first year after the disturbance in rates caused by the Crimean war.

Let us assume that the unknown influence which caused this depression of 4·65 was something which acted from beginning to end of the period with regularly increasing effect, so that the depression due to it in the first annual interval was one thirty-first part of the 4·65, in the second year was two thirty-first parts, in the third three, and so on until in the final or thirty-first year it caused the total fall of 4·65. This being assumed, we can of course correct the recorded marriage-rates for each of the thirty-one years, by restoring to it the amount by which it has been hypothetically depressed by the unknown influence, and when this is done, and the curve thus corrected has been graphically drawn out, that curve will of course hypothetically represent the fluctuation in the rates caused simply by the changes in the export values, and if the hypothesis be true, the new curve should correspond much more closely than did the old and uncorrected curve, both in the



direction and the proportionate size of its waves, with the curve of export values; and I need hardly add that, if that correspondence be found to exist, it will be very strong evidence indeed that the hypothesis of some constantly increasing depressing influence is true.

Let me then ask you to look at Diagram C, where the new curve, the curve that is of the rates corrected in the way described, is set side by side with the curve of export values, and I think you will agree with me that the required correspondence between the two does really exist. The two curves tally in the most remarkable degree with each other, in a degree which is certainly quite as close as could possibly be expected in so complex a matter as this; and this close correspondence is, as I have already stated, irresistible evidence that the hypothesis by which the correction was made was a true one.

It appears then that for many years past there has been some cause in operation, which, in spite of the increasing wealth of the country, in spite of the increased value and the still more increased bulk of our exports, in spite of higher wages and cheaper commodities, has tended to make men more and more unwilling to venture upon marriage, and it would be highly interesting to know what this influence may have been. Possibly, and probably, it has been no one single cause, but an aggregate of causes that has had this depressing effect. I can but suggest two which have almost certainly contributed to the result, though I am far from asserting that it is to them that the whole has been due.

Firstly, there is the continued and the increasing depression in agriculture, which has rendered marriage less and less possible among those who depend for their livelihood upon the land; and secondly, there is—and to this I am disposed to attribute the main share in the matter—the ever-increasing standard of comfort among all classes, which makes men and women unwilling to burden themselves with a family until they are assured of a much higher income than they would in former days have held to be sufficient. That the standard of living has vastly increased among the working classes, who form the great bulk of the population, no one, I think, will doubt who had the pleasure of hearing Mr. Giffen's papers read in this room; and that such a raising of the standard would lead to a retardation or abandonment of marriages, is self-evident. So that we have in this, and in the equally indisputable agricultural depression, two *veræ causæ* which must have produced part, and possibly may have produced the whole, of the depression for which we have been seeking an explanation.

Having now considered the causes of the fluctuations in the

marriage-rate in the whole kingdom, let us see what are the variations it presents in different parts of that kingdom.

The rates vary very greatly in the different registration counties, and the differences between one county and another in this respect present a very considerable degree of constancy from year to year. Thus, in Lancashire, Nottinghamshire, Northumberland, and in London the rate is invariably high, while in the extra metropolitan parts of Surrey, Middlesex, and Kent, as also in Essex, Hertfordshire, and Herefordshire, it is almost as invariably low.

Much of these apparent differences is merely due to the very great differences between counties in regard to the proportion of the unmarried men of marriageable ages in their respective populations; thus in some counties there is 1 such marriageable man—bachelor or widower—for every 13 of the population, while in other counties there is but 1 in every 20. In order to make due correction for this diversity, it is necessary to calculate the marriage-rate not by the proportion of marriages to the total population, but by their proportion to the unmarried men of marriageable ages, which we may take as from 20 to 45; for though some few men marry before 20, and others after 45, we may neglect these as too few to be of material importance. But even when the rates are thus calculated, there are still vast differences left between the counties, as may be seen in Table C, where the average rates thus calculated are given for each county for the ten years 1876-85. The counties are arranged in that table in order of their rates, and it will be seen that while in Bedfordshire, which stands at the top of the list, no less than 154 per 1,000 of the marriageable men marry each year, in Herefordshire, which stands at the other end, the proportion is only 80, while the remaining counties range between these extremes in an apparently inexplicable manner, their manufacturing or their agricultural condition giving, so far as can be detected, no clue whatsoever to their relative positions in the list.

TABLE C.

1 Registration County.	2 Average Annual Marriages per 1,000 Unmarried Men, Aged 20—45 Years, 1876-85.	3 Proportion per 1,000 of Women, 15—25 Years of Age, Industrially Occupied, 1881.	4 5 Under 21, per 1,000 Married.	
			Men.	Women.
Bedfordshire	154	701	147	226
Gloucestershire	145	465	85	190
Nottinghamshire	142	557	124	290
Leicestershire	140	628	126	252
Norfolk	134	420	97	226
Suffolk	131	382	87	218
Warwickshire	127	595	82	228
Somersetshire	127	469	80	167
Huntingdonshire	126	370	92	216
Devonshire	125	416	65	144
London	124	534	53	183
West Riding	123	600	96	262
Staffordshire	123	437	112	289
Lancashire	122	671	88	226
Buckinghamshire	121	475	108	221
Northamptonshire	120	507	114	240
Worcestershire	119	474	79	201
East Riding	117	286	74	260
Wiltshire	111	391	74	175
Cornwall	110	370	60	164
Derbyshire	110	475	97	276
Lincolnshire	108	266	59	214
Oxfordshire	108	368	72	178
Sussex	108	308	64	180
Cheshire	107	504	76	194
Durham	107	308	77	321
Northumberland	107	308	49	220
Dorsetshire	106	429	65	170
Cambridgeshire	105	320	88	214
Monmouthshire	104	308	73	241
Hampshire	103	327	46	191
Hertfordshire	102	468	43	185
Essex	101	332	75	226
Kent (extra met.)	100	280	59	218
Berkshire	98	366	59	167
North and South Wales ...	97	309	55	163
North Riding	93	231	63	258
Rutlandshire	92	261	38	160
Westmorland	90	349	52	159
Cumberland	89	364	51	197
Middlesex (extra met.) ...	89	302	50	166
Shropshire	84	286	42	144
Surrey (extra met.)	84	291	43	155
Herefordshire	80	289	43	142

This fact has long puzzled me, but I think I have at last hit upon at any rate a partial explanation of the difficulty. Seeing the curious position held by Bedfordshire at the top of the counties, I was led to consider what were the special peculiarities of the population of this rural county, and the most notable

feature in it appeared to be the great extent to which young women were occupied in the straw plaiting and the lace industries; and it appeared not impossible that the high marriage-rate might be connected with this fact, as men might not unnaturally be more ready to marry girls or young women who were themselves earning money. In order to test this hypothetical explanation, I calculated, by means of the records of the census for 1881, the proportions of young women between 15 and 25 years of age that were returned in the several counties as engaged in some industrial occupation, domestic servants being excluded from this calculation as almost necessarily in a celibate condition. The results are given in Col. 3 of Table C, and confirm generally the supposition from which I had started. For there is manifestly a very remarkable degree of correspondence between the marriage-rate as given in Col. 2, and the proportion of young women earning money in industrial occupations as given in the next column. The correspondence is by no means perfect; that is more than could possibly be expected; for no one can suppose that the only factor in determining the number of marriages is the power of the woman to contribute by her earnings to the household expenses. There are of course other factors, such as the amount of male employment and wages, and probably other local circumstances and customs are operative; but it is, I think, impossible to doubt on examining the figures that one very powerful factor in determining the marriage-rate is the degree in which women find industrial occupations. Almost all the counties in which the marriage-rate is high, are counties in which the proportion is also high of women engaged in industrial occupations, and therefore presumably in receipt of independent earnings; while all the counties at the other end of the list, all those counties that is in which the marriage-rate is very low, are also counties in which but a very small proportion of the women are industrially occupied. Thus of the seventeen counties that come first in the lists, that is to say, the seventeen counties in which the marriage-rates are highest, there is only one, viz., Suffolk, in which the proportion of young women engaged in some other industry than domestic service is under 416 in the 1,000; while of the sixteen counties at the other end of the list, of the sixteen counties that is in which the marriage-rates are lowest, there is only one, viz., Hertfordshire, in which the proportion of young women with independent occupations is as high as this. Doubtlessly there are many exceptions to this general statement, such as Norfolk and Suffolk, which stand much higher in the list, and Lancashire and Cheshire, which stand much lower than would have been expected. Still the general drift of the figures is, I think, unmistakeable, and

lead to the conclusion that marriage is, on the whole, most common where there is the largest amount of employment for women.

From time to time one comes across laments on the unhappy condition of women, who are represented as driven to matrimony because they are unable by any other means to support themselves. This doubtlessly may sometimes be the case, especially in the classes where women are not taught any remunerative art; but among the working classes the very opposite is the case, and those women who are industrially occupied, and therefore, on the whole, best able to maintain themselves, are those who are most likely to marry.

Marriages then are on the whole more numerous in those counties where women are earning independent wages; and the question naturally suggests itself whether women also marry at earlier ages in these counties. The only means we have of judging as to this is by considering the proportion of brides who are under age at the time of marriage in the several counties; and judging by this standard, it would seem that to some extent women who are earning independent wages do marry at an earlier age, but not to so great an extent as might have been anticipated. In most of the counties where the proportion of occupied young women is high, the proportion of under-age brides is also more or less above the average, and in most of the counties where the proportion of occupied women is low, the under-age brides are also comparatively few. But there are many exceptions, and especially notable in the case of Durham, where the proportion of occupied young women is very low, and yet the under-age brides are far more numerous than elsewhere (Table C, Cols. 3 and 5). The age of the brides seems to be much more determined by the earnings of the husband than by her own. It is in the mining or great industrial centres, in Durham, for instance, in Derbyshire, Staffordshire, the West Riding, and Nottinghamshire, in the counties that is where men are on the whole in receipt of high wages, that women marry youngest; and as the man when in receipt of comparatively high wages marries a very young wife, so would it appear that when women are in receipt of independent earnings they are inclined to wed with youthful husbands; for it is in the counties where the proportion of such women is high, that the proportion of under-age husbands is on the whole the highest. Thus in Bedfordshire, with the highest proportion of industrially occupied young women, the proportion of under-age husbands is also highest; while Nottinghamshire and Leicestershire, which come third and fourth in the list in Table C, are also the two counties in which after Bedfordshire these under-age husbands are most numerous.

And now, before leaving the subject of marriage-rates, a few words as to the relation between this rate and the growth of the population.

The population of England and Wales is, as we all know, growing in a most formidable manner; and though persons may differ in their estimates of the time when that growth will have reached its permissible limits, no one can doubt that, if the present rate of increase be maintained, the date of that event cannot possibly be very remote. The birth-rate, it is true, has of late years fallen greatly, but so also has the death-rate, and almost in equal amount; so that the balance between the two, or natural increment of the population, has practically scarcely changed. Hitherto some of the excess of births over deaths has been met by emigration, or rather by excess of emigration over immigration; but, without insisting on the fact that this remedy has never yet been on such a scale as to free the country of more than one-twentieth part of its redundant growth, or on the further fact that the remedy is one which is perpetually carrying off the more vigorous and enterprising of our working men, to the necessary deterioration of the residue left at home—without, I say, insisting on these facts—it is plain that the facilities for successful emigration are yearly diminishing, and that the time must inevitably come—sooner or later—when this means of reducing our population will altogether fail us. When that time shall have arrived, and the limits of the means of subsistence shall have been reached, in some way or other the birth-rate and death-rate will have to be equalised, so that the population, having reached its permissible magnitude, may remain stationary. This equalisation can clearly only be effected either by increase of mortality or by diminution of the birth-rate; and as no one will advocate the former, the problem of problems, which even now is vexing the souls of those who can look beyond the immediate future, is how the birth-rate is to be reduced. The only aspect of this question with which I am at present concerned is the extent to which it would be necessary to reduce the marriage-rate if the equalisation of births and deaths were left simply to that agency. The calculation is of course easy. The death-rate in 1888 had fallen to 17·8 per 1,000, and, as we trust that sanitary supervision will at any rate ensure for us the continuance of such a degree of healthiness as has been already attained, the birth-rate must, if equalisation is to be effected, be reduced to the same figure. Now the illegitimate birth-rate in 1888 was 1·4 per 1,000, being at its minimum, and we can hardly expect that when marriages are reduced there will be any decline in this figure; so that the legitimate birth-rate must not amount to more than 16·4 per 1,000. To what marriage-rate would a birth-rate of 16·4 correspond?

The average number of children born to a marriage in this country is about 4·2; and so long as the ages at which women marry do not materially change, this may be taken as a constant measure of fertility. Indeed so long ago as 1665 it was estimated by Captain Graunt in his often cited treatise,⁵ "that every wedding, one with another, produces four children." With 4·2 children to a marriage, the marriages which would give a legitimate birth-rate of 16·4 would be 3·9 per 1,000, which, as there are two parties to a marriage, gives a marriage-rate, in our English mode of stating it, of 7·8 per 1,000.

This then is the marriage-rate necessary to produce a stationary population, supposing the present mortality not to increase, nor other changes, such for example as advance in the ages at which marriage is contracted, to occur. Now the lowest point to which the marriage-rate has ever yet fallen has been 14·1, so that, if the growth of the population is to be stopped by mere reduction of marriages, the rate must fall 45 per cent. below the lowest point which it has ever yet touched, or, roughly speaking, nearly one-half of the persons who now marry must remain permanently celibate.

I confess that, seeing what human nature is, and how much more operative is the prospect of personal and immediate satisfaction than the fear of damage to the interests of future generations, I cannot entertain any hope that the remedy for undue growth of the population will ever be found in an adequate reduction of the marriage-rate. How far the end may be obtained not by absolute celibacy, but by retardation of marriage to later ages, will be presently considered.

From marriage-rates let us now pass on to marriage-ages, a subject of scarcely less importance than the rates in its bearing upon the growth of the population.

In Table D are given the average ages at marriage of bachelors and spinsters for each year from 1867 to 1888, and it will be there seen that the average age of the bachelors has been throughout either slightly below or slightly above 26 years, while that of the spinsters has been somewhat over 24; ages respectively very far removed from those held to be most advantageous by the ancients, who laid down that the best age for the wife was 18 or 19, while the husband should be, according to Hesiod, about 30, and according to Aristotle, as much as 37 years of age. But in those days population was scanty, and mortality was high, and the ideal aimed at was that conjunction which would result in the largest number of healthy children to meet the incessant devastation of war and pestilence.

⁵ "Observations on the Bills of Mortality," &c., 5th edit., p. 97.

TABLE D.

Year.	Average Age at Marriage.		Year.	Average Age at Marriage.	
	Bachelors.	Spinsters.		Bachelors.	Spinsters.
1867	25·8	24·5	1878	25·8	24·4
'68	25·8	24·4	'79	25·8	24·3
'69	25·8	24·4			
1870	25·8	24·4	1880	25·8	24·4
'71	25·8	24·4	'81	25·9	24·4
'72	25·7	24·3	'82	25·9	24·4
'73	25·6	24·2	'83	25·9	24·4
'74	25·7	24·3	'84	26·0	24·5
'75	25·7	24·3	'85	26·1	24·6
'76	25·7	24·4	'86	26·2	24·6
'77	25·7	24·4	'87	26·2	24·7
			'88	26·3	24·7

It will be seen, on examining the table, that the average age at marriage of both bachelors and spinsters is liable to fluctuation, and on comparing the ages in the twenty-two successive years included in the table with the corresponding marriage-rate, it will be noted that the lowest average age for both bachelors and spinsters was in 1873, the year in which the marriage-rate was highest, and that from that date to the present time the ages have gone up gradually but progressively in harmony with the general decline in the marriage-rate; so that it would appear that in times of industrial activity not only are marriages more numerous, but they are contracted at earlier ages than in less prosperous periods, and that in bad times not only do fewer persons marry, but those who do marry are on the whole of riper years.

The same fact is shown in another table (Table E), in which the annual marriage-rates are given for different ages for 1851 and for 1880-82. In this interval of thirty years, the marriage-rate fell from 17·2 to 15·2; but the table shows that this decline was entirely brought about, so far as bachelors are concerned, by a decline in the marriages of those between 20 and 25 years of age, and that bachelors older than this actually married at the later date in higher proportions than before; and something of the same kind is visible, though not quite so distinctly, in the case of the widowers, the spinsters, and the widows, that is to say in each of these groups the decline in marriages was less in the advanced than in the earlier ages, and indeed in the very advanced ages the rate in all cases rose.

TABLE E.—*Annual Marriages per 1,000 Living at each Period of Life.*

Ages.	Bachelors.		Spinsters.		Widowers.		Widows.	
	1851.	1880-82.	1851.	1880-82.	1851.	1880-82.	1851.	1880-82.
15—	4·6	4·6	21·8	21·5	—	—	50·0	56·6
20—	112·1	106·8	126·7	121·9	307·7	193·0	196·5	155·3
25—	107·2	112·4	82·9	80·6	312·6	246·5	127·7	114·6
35—	38·3	40·5	32·5	26·3	167·6	157·8	55·4	50·2
45—	11·2	14·3	10·4	10·4	71·1	76·9	19·0	18·6
55—	2·6	4·4	2·6	2·5	23·8	33·9	4·5	5·4
65—	0·8	1·0	0·2	0·4	3·8	6·0	0·3	0·6
All ages ...	57·7	55·8	60·8	56·9	64·6	58·2	21·0	18·2

The mean marriage-age then has for a long series of years, ever since 1873, been gradually increasing; marriages have been getting fewer and fewer, and those who have married have been each year older and older. But the entire change after all has not been very great. In 1873 the bachelors averaged 25·6 and the spinsters 24·2 years of age, and that was for each the minimum; while in 1888 the ages had risen respectively to 26·3 and 24·7, and these were each the maximum; so that the whole change has been an addition of six months to the average age of the spinsters, and of about eight months to the average age of the bachelors. It must not however be assumed that such an addition is unimportant. An average difference of six months in the age at marriage would mean for the 204,000 marriages which were contracted in 1888 a lessening by 102,000 years of the aggregate amount of cohabitation of those who married in that year, and this repeated annually would possibly mean a very considerable reduction in the growth of the population. Whether it does so or not we shall see presently.

But if the average age at marriage varies but little from year to year, it is not so with the marriage-ages in different classes, as is very clearly to be seen in the two following tables (Tables F and G), in the former of which are given the mean ages at marriage of bachelors and spinsters in different occupational groups, while the other gives the age-distribution of bachelors and spinsters in the several groups at the time of marriage.

TABLE F.—Average Ages at Marriage, 1884-85.*

Occupations.	Bachelors.	Spinsters.
Miners.	24.06	22.46
Textile hands	24.38	23.43
Shoemakers, tailors	24.92	24.31
Artisans	25.35	23.70
Labourers	25.56	23.66
Commercial clerks	26.25	24.43
Shopkeepers, shopmen	26.67	24.22
Farmers and sons	29.23	26.91
Professional and independent class	31.22	26.40

* The age-distribution of the men employed in the different occupations differs much; and this would, if uncorrected, of course cause some difference in the mean marriage-ages of the groups. To meet this difficulty, so far as possible, in the professional and independent group were included students of law, medicine, theology, &c., as also all men described simply as gentlemen; so also with shopkeepers were included shopmen, and with farmers their sons or other near relatives living with them. As to these and other precautions taken to make the groups as fairly comparable as possible, see forty-eighth (p. ix) and forty-ninth (p. viii) annual reports.

TABLE G.—Age-Distribution per 1,000, of Bachelors in different Occupations, and of their Wives, at time of Marriage.

Ages.	Miners.		Textile Factory Hands.		Labourers.		Artisans.		Shoemakers and Tailors.	
	Men.	Women.	Men.	Women.	Men.	Women.	Men.	Women.	Men.	Women.
Under age	169	439	144	337	121	318	109	282	172	276
21—25.....	535	388	558	432	455	408	489	448	477	412
25—30.....	228	123	205	149	277	184	278	192	232	183
30—35.....	47	30	58	49	88	54	73	48	76	79
35—40.....	14	11	16	18	29	20	25	16	23	30
40—45.....	6	4	12	7	18	9	17	8	6	10
45—50.....	—	4	5	4	7	5	4	4	8	4
50 and up- wards	} 1	1	2	4	5	2	5	2	6	6

Ages.	Shopkeepers and Shopmen.		Commercial Clerks.		Farmers and Farmers' Sons.		Professional and Independent Class.	
	Men.	Women.	Men.	Women.	Men.	Women.	Men.	Women.
Under age	55	226	27	197	31	111	7	127
21—25.....	412	449	432	450	253	396	144	402
25—30.....	323	232	379	262	349	262	376	278
30—35.....	128	62	130	61	217	115	272	107
35—40.....	53	18	13	17	75	65	98	34
40—45.....	19	7	11	7	47	20	43	24
45—50.....	6	6	6	3	14	20	26	11
50 and up- wards	} 4	—	2	3	14	11	34	17

These tables are based upon samples taken by me from the marriage registers of 1884-85. The samples were of considerable size; still it is quite possible that had they been larger, and had they extended over a greater number of years, the figures might have been somewhat different, though it is scarcely possible that they would have been materially altered. They show at any rate with sufficient clearness that the ordinary belief that the lower the station in life, the earlier the age at which marriage is contracted, is true, and that the difference in this respect between the upper and the lower classes is very great indeed. It will be enough if we take a single example, and compare miners, for instance, with the professional class. Of the miners who marry, 704 in 1,000 are under 25 years of age; of the professional and independent class only 151; while the miners' wives, 827, and of the upper classes only 529, per 1,000 are under that age. The average marriage-age of the miners is 24, and of their wives $22\frac{1}{2}$ years; while the ages for the professional and independent class are respectively 31 and $26\frac{1}{2}$ years; a difference of seven years for the husbands and four years for the wives.

The table of mean ages has already appeared in the forty-ninth annual report of the registrar-general, and has been often quoted since; but, whenever I have chanced to see it cited, I have been somewhat surprised to find that the ages for the men were alone given, and no notice taken of the respective ages of the wives. It appears however to me that the ages of the men at marriage are, so far as concerns the growth of population, of comparatively small importance. For there is no reason whatsoever, so far as I am aware, to suppose that retardation of marriage in the case of men, of course within reasonable limits, will materially affect the number of their offspring, excepting that the older a man is when he marries the older will also be probably his wife, and further, that the older he and she are at marriage, the greater somewhat will be the chance that either he or she will die before the child-bearing period is fully completed. But independently of these considerations, there is, as I say, no reason to believe that a man who marries at 30 will have a smaller family than a man who marries at 20, so long as the two wives are of one and the same age. Doubtlessly in the long run the wives in the two cases will not be of one and the same age, for as Table H shows, though older men usually marry older wives, they do not marry wives older in proportion to their own greater age. So far then as increase in population goes, the matter of importance is the age of the wife, not of the husband; and any material diminution in the growth of the people that is to be looked for from retarded marriage, must be obtained by retarding the marriages of women,

not those of men. If greater age on the part of the husband were to have this effect, the ancient writers whom I have already quoted, who desired above all things the rapid growth of the population, would have been in serious error in proposing that the age of the husband should be 30 or 37 years; but as a matter of observation they were well aware that the age of the man had but little to do with the number of the progeny, while the age of the wife was of considerable importance, and this, as we have seen, was put by them at 18 or 19.

As regards men, it is not the age at which they marry that is of importance, but the question whether they marry at all, and I have consequently tried to make some estimate of the relative proportions in which men in different classes of life altogether abstain from matrimony. The method I employed was to go through a large number of the census enumeration books, and ascertain what proportions of labourers and artisans, of shopkeepers, and of professional and independent men, in 1881, were still bachelors when they had reached the mature age of 50 years. I expected to find that the proportion would be smallest among the artisans and labourers, and highest in the professional and independent class; but as a matter of fact it turned out that it was among the shopkeepers that the proportion of confirmed bachelors was far the lowest, as probably, with more thought given to the subject, might have been anticipated, seeing that to a shopkeeper a wife is often almost a business necessity. Next to the shopkeepers, but a good way from them, came the artisans and labourers; while far ahead of all were the professional and independent class, with a proportion of permanent bachelors far above the rest. What is true of the men in these several groups is probably also true of the women, but I have no statistical evidence of this. I find however testimony to that effect given by those who are conversant with the habits of working women. Thus Miss Collett, writing⁶ of the east end of London, says, "every girl in the lowest classes can get married, and with hardly any exceptions every girl does marry. This is not true of the middle classes." It thus appears that in the upper classes not only do a larger proportion of persons remain throughout life unmarried, but those who do marry, marry at a much more advanced age than is the case with the rest of the population.

Now in the professional and independent classes the average age at marriage of the women is nearly $26\frac{1}{2}$ years, and it would be of interest to know what would be the result as regards the birth-rate, if the women in all classes could be induced to retard their marriages to the same extent as do the women of the upper classes.

⁶ "Labour and Life of the People," p. 472.

But, for the sake of somewhat simplifying the question, let us inquire how far the growth of the population would be reduced if all women who marry within the childbearing ages were to marry five years later than they do now.

I think the ordinary notion of persons who have not thought about the matter will be that if 1,000 women marry at 20, and a second 1,000 marry at 25, the children born to the latter will be fewer than the children born to the former by as many children as these give birth to in the interval between their 20th and the end of their 25th year. But this is far from being the case. A woman who marries at 20 will, on the average, come to the end of her childbearing at an earlier age than the woman who marries later, say at 25. For the cessation of childbearing is determined not simply by the actual age, but also in part by the length of time that has elapsed since childbearing began. In short, fertility exhausts itself by its own activity.

What we have first to do is to ascertain what number of children are born on an average to women who marry at different ages. I can find no data for the direct determination of this. But there are data which will, I think, enable us to arrive at a sufficiently approximate result in an indirect manner.

The basis on which I build is a table in Dr. Duncan's treatise⁷ on fecundity, in which are given the percentages of wives married at various ages, who were still bearing children after five, ten, fifteen, &c., years of married life. That table supposes the wives to remain alive throughout the periods in question. But as a certain number of them will die, or will lose their husbands, before the childbearing period is completed, it was necessary first of all to correct the figures for these chances.

The life table used by me for this purpose was that which I constructed from the death returns of 1871-80;⁸ and the husbands' ages, for wives married at different ages, were calculated from the data in the fiftieth annual report of the registrar-general, to be as follows:—

TABLE H.—*Average Ages of Husbands at Marriage to Wives of various Ages.*

Marriage-Age of Wife.	Average Marriage-Age of Husband.
15—20	23·1
20—25	25·1
25—30	28·6
30—35	33·8
35—40	39·2

⁷ Cf. "Fertility, Fecundity, and Sterility," 1866, p. 148.

⁸ Cf. "Supplement to the Forty-Fifth Annual Report of the Registrar-General," pp vii and viii.

The corrections having been made, the following table was obtained, which gives the percentage of wives married at various ages who remain alive, with living husbands, and still fertile, after various periods of years:—

TABLE I.⁹

Percentage of Wives with Living Husbands, and Fertile.	Age at Marriage.				
	15—	20—	25—	30—	35—40
After 5 years	59·9	57·1	37·0	30·5	14·0
„ 10 „	44·8	35·1	23·0	15·1	—
„ 15 „	28·2	18·4	6·5	3·1	—
„ 20 „	13·5	7·6	0·8	—	—
„ 25 „	1·4	0·2	—	—	—
„ 35 „	—	—	—	—	—

We may fairly assume that those wives who had ceased to be fertile, or had died, or lost their husbands, after five years from the date of marriage, had on the average been fertile for two and a half years; while those who continued their childbearing later, but had ceased when ten years were past, had been fertile for seven and a half years, and so on with the other periods; and assuming this, we can easily calculate the average period of fecundity for wives married at different ages. They are as follows:—

TABLE J.

Age at Marriage.	Fertile Married Life in Years.
15—	9·86
20—	8·42
25—	5·87
30—	4·94
35—	3·20

Now, the age-distribution of women who were at the time of marriage within childbearing ages, which, disregarding the few exceptions, we may take as terminating at 40, was as follows in 1856-88, and the proportions are sufficiently constant for our purpose:—

TABLE K.—*Age-Distribution of Wives under 40.*

Age at Marriage.	Proportion per 1,000.
Under 20	124
20—25	527
25—30	232
30—35	77
35—40	40

⁹ Table I is to be read in the following way: Of 100 women married when under 20 years of age, 59·9 were still alive, with living husbands, and fertile, after five years of married life, 44·8 were so after ten years, and so on.

Combining these figures with those given in Table J, it will be found that the average duration of fertile marriage life for women within childbearing ages is, with the present ages at marriage, 7.53 years; and that, if all these women delayed their marriages for five years, the average duration of fertility would be reduced to 5.53 years, or by 26.6 per cent.

What effect would this have upon the birth-rate? We can scarcely be far out if we assume that a reduction of 26.6 per cent. in the average duration of childbearing would cause a corresponding reduction in the average number of children to a marriage; in which case that number, which is now 4.2, would fall to 3.1. With a marriage-rate of 14.1, which is the lowest as yet recorded, this would give a legitimate annual birth-rate of 21.9 per 1,000, to which must further be added 1.4 for the illegitimate birth-rate, which, as already stated, is scarcely likely to fall lower than its present level if marriages are in any way hindered.

So that finally we arrive at the conclusion that in the very improbable event of all women retarding their marriages for five years, we should have a birth-rate of 23.3 per 1,000; doubtlessly a very great diminution of the present rate, but still far too small a diminution to produce anything like an equalisation of births and deaths, the death-rate having fallen, as we have seen, in 1888 to 17.8. The population would still be growing at the rate of between 5 and 6 per 1,000 annually.

In order therefore to produce a stationary population, the ages of women at marriage would have to be advanced by considerably more than five years; and when we reflect that in the whole series of years for which we have the figures (Table D) the average age of brides has only increased by some six months, we may, I think, dismiss altogether the notion that any adequate check to the increase of population is hereafter to be found in retardation of marriage. Such retardation may defer the day when a stationary population will be necessary, but, when that day has come, will be insufficient to prevent further growth.

Now it has already been shown that, if a stationary population is to be obtained by simple diminution of the marriage-rate, that rate would have to be reduced 45 per cent. below the lowest point it has ever yet reached, or, in short, that almost one-half of those who marry would have to remain permanently celibate. This seems almost as hopeless a remedy as the retardation. But how if the two methods are combined? The calculation is easily made. With an average of 3.1 children to a marriage—that being the average which would result from a retardation of marriages for five years—a marriage-rate of 10.6 per 1,000 would give a legiti-

mate birth-rate of 16·4, which, with 1·4 for the illegitimate rate, would give a total birth-rate of 17·8, which is also the death-rate of 1888; or, to express this in other words, if one-quarter of the women who now marry were to remain permanently celibate, and the remaining three-quarters were to retard their marriages for five years, the birth-rate would be reduced to the level of the present death-rate.

In conclusion then it is manifest that if the growth of population is hereafter to be arrested, and a stationary condition produced, either by emigration, or by increase of permanent celibacy, or by retardation of marriage, these remedies will have to be applied on a scale so enormously in excess of any experience, as to amount to a social revolution.

DISCUSSION *on* Dr. OGLE'S PAPER.

MR. F. HENDRIKS, Vice-President, said the paper was a most elaborate and interesting one, but it so bristled with problems that a great many questions might be put upon it. He wished to ask Dr. Ogle why he had placed the value of British exports per head of the population as the test of the commercial activity of the country. Why had he not included the imports as well? If imports were included the figures for 1888 would be nearly trebled. There could be no doubt that the imports and the domestic industry of the country contributed as much to the commercial activity as the exports, and therefore to a large extent Table A was deficient in that respect, as well as from its taking no account of production for home use, or of inland consumption and trade. In computing the marriage-rate from 1820 to 1868, had any allowance been made for the variations which had occurred in the distribution of the population according to the variations which were always arising in the proportions of the marriageable ages? If Dr. Ogle had merely taken the collective total population at each of the census periods, then, inasmuch as the relative and comparative numerical importance of the younger population of the country had been increasing from augmented births, low death-rate, and from emigration of adults, there might be very great discrepancies in arriving at the precise figures of the fluctuations in the marriage-rate. In his criticisms on Dr. Farr's researches on this question, had Dr. Ogle given sufficient consideration to the fact that Dr. Farr was writing as long ago as 1846, and consequently only had experience of a very different state of things from that which was now possessed? Dr. Farr had only the experience of the years between 1820 and 1846. At that time the average price of wheat in this country was a very much more important factor in the

expenditure of the working classes than it could be now. Of course there were some foreign supplies of wheat and flour in 1846, but they were not more than one-ninth of the present importations of these articles of food, and therefore the fluctuations in the average price of wheat in England were then of greater importance than they have been subsequently. He thought Dr. Ogle was mistaken in supposing that Dr. Farr was in error in saying that cheap food, particularly if accompanied with cheap lodging and clothing, and with improved wages, meant an increase of the marriage-rate. It was in the nature of things that it should be so. John Stuart Mill, too, did not say that cheap food was the only factor, as he also spoke of full employment. Mr. Fawcett's opinion was expressed in a brief manual of political economy in which he could not go into any minute explanations. He (Mr. Hendriks) had some doubts about the accuracy of the statement in Dr. Ogle's paper in which freights were referred to as necessarily rising when there was a briskness of trade. That depended upon exceptional circumstances, because competition governed freights as well as prices. He rather thought it was also a mistake for Dr. Ogle to deprecate any other comparison than that of one year with the preceding or following year. A comparison between groups or averages of years might be more instructive. For example, if the years which followed on the gold discoveries from 1850 to 1866 were taken, it would be clearly seen, as written largely in the figures, that the marriage-rate had increased from the commercial prosperity of England having gone so much ahead during that period. The marriage-rate in 1851-66 averaged 16.9 per mille, whilst during the whole sixty-nine years 1820-88 it averaged only 16.2 per mille. There was during that time which followed the Australian and Californian gold discoveries, a recrudescence of the average beyond the highest point of the initial period, and it was a matter for consideration whether an average drawn through the whole of the sixty-nine years covered by Dr. Ogle's table, namely, 16.2 per mille, would not represent the normal rate below which in long periods, sometimes of advance, and at other times of decline, in our national prosperity, the marriage-rate could hardly be expected to decline. He was afraid it was only a small fringe of the labouring classes who were guided by any consideration of what might occur after their own lives. It was very natural that those in the lower stages of society should cultivate the present moment, and not look much ahead. At the same time the old economists must not be blamed as if they had neglected to call attention to this. Such was by no means the fact. For example, one of the earliest members of this Society, Malthus, in his great work, the first edition of which appeared so long ago as in 1798, said that all that could be hoped for as a check to too early marriages was that the lower classes of the people should continue to improve in knowledge and prudence. The same language was used by John Stuart Mill, who said that nothing but moral compulsion, by which he meant the considering by the labouring classes of the consequences of their entering into marriage responsibilities at too early an age, would provide a remedy, as a guarantee of subsistence could only

thus be kept up practically when work is enforced and superfluous multiplication restrained.

MR. H. MONCREIFF PAUL did not think it fair to make a comparison between the average price of wheat and the marriage-rate with a view to drawing conclusions such as Dr. Ogle had done. The "Gazette" average quoted by him was merely the average of English wheat, obtained in a particular way. It was not the average price of all the wheat sold or consumed in this country. The importations of wheat of late years has been very much greater than those of the earlier years reviewed in the paper, and it followed that the prices shown in the tables for later years could not be so great a factor as formerly in determining the value of wheat consumed. In order to take a test from the standard of provisions, it would be necessary to have statistics of all the other products that go to form the food of the masses of the people, such as meat, vegetables, dairy produce, tea, sugar, &c. But even if that were done, the figures given would have an unimportant bearing in regard to a certain proportion of the middle and upper classes. He therefore thought that wheat statistics *per se* could not be accepted as any true test. Nor was it fair to take the exports per head without the imports as a test, and even if both were taken, a considerable amount of correction would be necessary, for the simple reason that the prices were annually of a fluctuating character. Were it possible to make a comparison by quantities, a more accurate result would be arrived at. He found that in the Australasian colonies it was equally impossible to derive any accurate conclusions over a series of years from a comparison of the marriage-rate with the value of exports per head of the population. There not only were provisions uniformly cheap, but there was little pauperism. But the following table, which he had prepared from official sources, for the decade ending in 1888, showed that no conclusions could be formed as to any ultimate connection over that period between a high marriage-rate and a high export value per head:—

Year.	Persons Married per 1,000 Living.	Exports. Value per Head.
		£ s. d.
1879.....	14'02	15 19 11
'80.....	14'16	18 4 10
'81.....	14'76	17 8 -
'82.....	15'74	17 12 6
'83.....	15'98	18 18 6
'84.....	15'78	17 8 11
'85.....	15'60	15 16 10
'86.....	14'90	13 9 8
'87.....	14'38	14 9 10
'88.....	14'94	15 18 10

While according to Table A in Dr. Ogle's paper, in known years of prosperity such as 1872 and 1873, a high marriage-rate,

synchronised with a high export rate in this country, in the same way in the Australasian colonies during 1882 and 1883, the rates both for marriage and export were high; still no proper conclusions could be deduced from those figures. A great many more factors must be brought into play before the problem which Dr. Ogle had tried to solve could be satisfactorily settled. Dr. Ogle had said that when exports increased so also did freights, and the rise in freights caused a corresponding rise in wheat, but that conclusion was manifestly a *non sequitur*. Of course, if the export of goods and manufactures increased, shipowners took advantage of this to raise the rate of freights, but it did not follow that because vessels earned a higher freight outwards they should also do so homewards. The shipowner looked for profit at the earnings on the voyage all round, and if he got a higher rate outwards he would be prepared to accept a lower rate homewards, so that if the return cargo happened to be wheat, it might be carried at a very low freight, and the article would in consequence show no rise in value. Dr. Ogle sought to explain the great divergence of the marriage curve from the export curve in Diagram A, by comparing the years 1866 with 1888, wherein he found a difference of 3·3 in the marriage-rate coincident with an export value very nearly identical. Why were those particular years selected in the period 1857-88? Because there were other groups of two years within the same period which would answer the same purpose, although exhibiting quite a different result. For instance, in 1867 and 1887 the value of exports per head of population was identical within a few pence, and yet the difference in the marriage-rate was 2·3. Dr. Ogle sought to apply the difference of 3·3 between 1866 and 1888 to the whole period between 1857 and 1888, and on this hypothesis assumed a reduction of 4·65, whereas the actual reduction was 2·3, exactly the same as that between 1867 and 1887. He seemed to think that the area of country suitable for emigrants was gradually decreasing, but there was a great portion of the earth still requiring to be populated, if men and women could be persuaded to emigrate instead of remaining as limpets on their native rocks. In conclusion, he observed with regard to the middle and upper classes, that a very important factor in the marriage question was the luxury rampant everywhere. A girl was frequently not allowed to marry unless her parents were satisfied that there was a sum provided for her maintenance at the outset equal to that which the parents themselves had acquired after many years of toil and labour.

Mr. S. BOURNE thought that Dr. Ogle was right in regarding the amount of exports as the best test of the prosperity of the country. If therefore the marriage-rate increased with the prosperity of the country, and coincided with the rise of exports, there must be a strict relation between the two, the one causing and the other proving the prosperous condition of the trade of the country. He agreed with Mr. Paul's opinion in regard to the matter of freights. When the outward freights were high, there was keen competition among shipowners to get something to take back, and

so the return freights were oftentimes reduced. He thought there was scarcely any correspondence between the freight paid for wheat brought home and the price it fetched in the market when it arrived. The prevailing disinclination to marriage in the upper classes more than in the lower was to be accounted for in a great measure by the luxury in which they were in the habit of living, and he looked upon it as one of the most fatal blots in the condition of the country. He did not think a greater stigma could be cast upon the manhood of England than the proof the paper afforded that men were more ready to marry when they could get wives who could contribute to the purse. With regard to the diminution of facilities for emigration, he thought Dr. Ogle had fallen into a very serious error. The increase of shipping facilitated the transference of the population to other parts of the world, and the reason it was not more extensively availed of was the absurd idea that people must stick to the barren rock on which they were born rather than go to the fertile fields of other portions of the British empire. He did not agree with Dr. Ogle that a deliberate attempt should be made to diminish the number of marriages, but preferred that homes should be found for the population as it increased in portions of the empire which were greedy to receive them. Nothing was doing more mischief to the country than the restraint of matrimony, and it would be a most serious injury if the Society stood forward as the champion of any such means of restraining the population as were set forth in the paper. They should rather bend their forces towards the utilisation of the means provided in the colonies, and encouraging more careful living at home.

Dr. G. B. LONGSTAFF said he admired the extremely ingenious reasoning which ran through the paper, and he was only disposed to differ from the author on the question of freights. It appeared to him that there was a possible relationship between the high price of corn and the increase of the marriage-rate in this way: in times of prosperity amongst the lower orders there was reason to suppose that a very great waste of food took place, and presumably the price of corn would be to that extent kept up by the greater carelessness in using it. As regarded the question of room for new populations in the colonies, he was disposed to agree with Dr. Ogle. Anyone who considered the history of the world must see that a most extraordinary crisis had been passed through during the lifetime of many now present. Malthus thought he saw very clearly the coming of the end. Not very long after his death there was an astonishing opening out by railways in the western territories of the United States, and also in Australia. But there was not another United States nor another Australia; there was not even another Argentine Confederation. In short, although the immediate end of the capacity of those countries was not yet in sight, practically the complete geography of the world was known, and there were no enormous areas of fertile land still unutilised. It was assumed very often by people who were rather loose in speaking or writing on this subject, that the great prairies

of West America were simply occupied in growing wheat for Europe; but that was very far from being the case. America itself was now consuming a quantity of wheat out of all proportion to what she did thirty or forty years ago, and the colonies were filling up much more rapidly than was generally imagined. He considered that the position of Massachusetts and portions of the State of New York was practically the same as England; they could not produce anything like the quantity of food they required for themselves. It was very difficult to say when the time would come, but in a paper read not long ago before the Society, Mr. Giffen said that in the middle of next century the pressure of population would be so great as to show itself very clearly in prices. His own idea was that we were not very far off the minimum in the price of wheat. When the rise had once begun, it seemed to him it would be continuous.

Sir R. W. RAWSON said that in comparing the rate of marriage with the recorded value of exports, it must be borne in mind that that recorded value was a very imperfect indication of the quantity of exports leaving this country, and of the activity of manufacturing industry giving employment to the people. The increased or decreased consumption of British manufactures within the United Kingdom is an important factor for consideration in this matter. There was no doubt that the price of exports was increasing, and the quantities were increasing, but the increase was not sufficient to account for the acknowledged improvement in the condition of trade, and for this reason it would be a mistake to adopt the recorded value of exports as a safe measure of the improved condition of the population.

Mr. A. E. BATEMAN said that Dr. Ogle had managed to bring together the questions of trade and population in a very interesting manner. Mr. Paul had found fault with the recorded price of wheat, because it had been taken from home grown wheat only. But the prices of wheat in the English market were for the same quality, whether grown in America or at home, so that he thought the column in the paper might be taken as quite what it ought to be. Up to 1854 the values of imports were based on prices of nearly two hundred years before, and the accounts thus did not show the actual value of what was imported. What was wanted to be known was the value at the present time of our trade. Mr. Bourne still stuck to his original contention about the value of exports being the great test, as opposed to the view of the late Mr. Newmarch and many others that the value of imports is of more importance. In that he thought they were both right and wrong. It was not only the exports that showed the condition of the people: it was also the increased value of raw material, food, and manufactures that were brought to England to be used for the comfort of the people. He did not think Dr. Longstaff was quite right in what he said about more corn being consumed in good times. Instead of more bread, meat and other things were eaten in good times, which in bad times the population could not afford. In good

times and in bad times the consumption of wheat altered very little in this country. With regard to freights it could not be said that sudden changes in their rates would act *simultaneously* in the production of wheat in India and Russia, although in the course of years these freights had a great effect.

Rev. ISAAC DOXSEY said that some very valuable papers had been read by members of the Society, showing that about 1873 the difference between the import and export curves considerably altered, and that difference has gone on increasing; and with that there has been an increasing fall in the marriage-rate. If Dr. Ogle would give a curve showing the *imports* as well as the *exports*, it would, he thought, be seen that that difference nearly synchronised with the fall in the marriage-rate.

Mr. JOHN B. MARTIN joined in expressing his thanks to Dr. Ogle for a paper which he had not only made remarkably interesting in itself, but had illustrated graphically in the form of diagrams. The corrected Diagram C showed remarkable symmetry in its curves; and it might be noticed that both in periods of prosperity and of depression the matrimonial curve always lagged a little behind the time, as was shown in the years 1872-73, and 1878-79. This year 1873 was a year well known to have been one of great disturbance, and it had, in fact, become a terror to statisticians; but the curve of Diagram A, though apparently less symmetrical, was the most interesting of all. He might remark, what had not been indicated by any of the previous speakers, that the matrimonial curve must necessarily vary within certain limits, whose extremes Dr. Ogle would know better than anyone else. In a thousand people there must, of necessity, be a fixed number of couples between whom matrimony was possible; but in the years under review, the steamship, the railway, steam power, and electricity had enormously increased the productive power of each individual, which must practically be illimitable; and therefore in comparing the fluctuations of the marriage curve with the curve of exports, two things were brought together which were not strictly comparable. At that period of the evening he did not wish to enter at length into the economic aspect of the paper, which did not, perhaps, come within the scope of the Society. He would not therefore follow Mr. Stephen Bourne on the ethics of marrying women earning money on their own account; but he must join issue with him directly in his views of the question of population. When the vast amount of misery and disease that burden our great cities, and not our cities only but also the rural districts, is considered, he could not advocate the contention that an increase of the population was an unmixed advantage. He thought that an enormous responsibility rested on those who added to this mass of human misery by the addition to it of additional souls of whom only the more vigorous would emigrate, leaving the infirm and diseased to encumber yet more those who were left behind. In a reduction of the growth of population by the exercise of prudential restraint in marriage, even at the cost of

deferring the average age at which marriage was contracted, he looked for the best hope of the prosperity and salvation of the country.

Major CRAIGIE desired to join in thanking Dr. Ogle for a paper which raised important issues and suggested noteworthy conclusions. He thought they had by no means yet heard the last of the discussion started this evening on this subject. He wished to emphasise only a single point, and one he had touched upon on previous occasions, that there was a danger of too much importance being still attached—in deference to former practice—to the price of wheat. There was a time when that price was much more truly an indication of the general level of price of provisions, and of the well-being and food-commanding power of the masses of this country, than at the present time. If the marriage-rate could be compared with prices of meat and other commodities, now entering as potently into the workmen's annual budget, a record might be obtained which might be of greater value. He would only add that one thing seemed to corroborate Dr. Longstaff's remarks about the possible ultimate restriction of the field for emigration in growing populations of the Western States of America, namely, the "booms" or rushes to unoccupied lands lately observed. These showed that opportunities for acquiring settlements or fresh lands of agricultural value were not quite so plentiful as we once regarded them, or as Mr. Bourne perhaps imagined.

The PRESIDENT thought that in speaking of the difference in the marriage age between the upper and the lower classes, Dr. Ogle had omitted to take into consideration the fact that the professional class did not come into existence until they were 23 or 24 years of age, while miners began to be miners as lads. That of course would account for the high proportion of miners marrying at an earlier age compared with professional men.

Dr. OGLE (in reply) said that Mr. Hendriks asked whether the marriage-rates for the earlier years after 1820 had been corrected for differences in the age-distribution of the population at that time as compared with years later on. They had not, nor was it at all necessary that they should be; for though the age-distribution differed much in different countries, it changed very little from time to time in one and the same country, so that any effect such change would have on the marriage-rate was quite unimportant. At the same time he would admit that those early rates were not very trustworthy, as compared with the rates for the years since civil registration was instituted; they were estimates only, made from the data collected by Mr. Rickman; and his only reason for giving them at all, was to show that they did not support the views as to the inverse relation between marriages and the price of wheat, which had been expressed by Mill, Fawcett, and Farr; from which he inferred that they must have founded their opinions upon some foreign marriage figures.

He was asked why he had taken exports to compare with marriages, and not imports, or exports and imports together; he had given his reason in the paper; it was because he found as a matter of fact that the movements of the export values corresponded more closely with those of the marriage-rates, than was the case with the other values. Another question put to him was, why in trying to estimate the amount of depression in a given number of years caused by the influence, whatever it was, that had been acting on the marriage-rate, he had taken the years 1888 and 1866 as his two points, and not the years 1887 and 1867, which would have given a different amount; to this he would say that he had naturally taken the last year in the series, and then gone back till he came to another year in which the export values were the same as in it; and that, though it was quite true that, had he taken 1887 and 1867, the calculated depression would have been slightly smaller, yet the correction would have been in the same direction, and the two curves in Diagram C would still have resembled each other much more than they did before the correction was applied, which was all he wished to prove; for of course he did not suppose that the calculation was more than rough, or that the depressing force had really acted with such mathematical regularity as suggested. There at any rate were the two diagrams, and he thought it could not be disputed that the correction applied had made the two curves very similar; and the more similar they were the greater the probability that the correction had been made on a true hypothesis. He came now to another criticism which, if the facts were really as stated by his critics, was, he must allow, fatal to that part of his paper which it attacked. He had long been puzzled by the strange fact that the marriage-rate rose and fell with the price of wheat, and he fancied that he had at last found a plausible explanation of the paradox, namely, that marriages increased when the export trade was active, and that this activity caused a rise in freights, which in its turn sent up the price of wheat; but now he was told that this was a mistake, for that when the export trade was active it was only the freights outwards that rose, and that the freights homewards actually were considerably lowered, because of the number of empty ships wanting to return home. Well, if this were so, and he admitted that it was a subject on which his critics apparently were better informed than himself, his argument broke down, but he should have been glad if his critics had not been contented to destroy his explanation, but had given some explanation of their own. There were the figures, and there could be no doubt that it was the case that when wheat rose in price, so did almost invariably the marriage-rate. How did they explain this strange fact? Their statement made the difficulty greater than ever, for now they had to explain how it came about that wheat actually became dearer when the cost of its conveyance to this country, according to them, went down! Objection had been made to his statement that the facilities for emigration were diminishing, and one speaker had said that they were actually increasing owing to cheap steamers; but he was not speaking of

the difficulties of transit, but of finding suitable places to go to; and as to this he agreed with what had fallen from Dr. Longstaff. Allow even that there were undiscovered tracts in the world of suitable soil, which could take some spare millions from us, at our present rate of increase this would soon be used up, and all that the discovery would do would be to put off the evil day a little longer. As things were, he heard surely of foreign countries refusing to admit emigrants so readily as they used to; and after all, what he had said was that if emigration was to be the remedy for our surplus growth, it must be applied on a scale vastly greater than ever yet had been the case, for in no single decennium hitherto had more than one-twentieth part of the surplus growth of England and Wales been got rid of in this way. Mr. Bourne attributed the recent fall in the marriage-rate to the luxury of the upper classes; but the upper classes were a small minority; the bulk of the people were labourers and artisans, and it was their marriages that really made the rate, which was scarcely modified by the habits of the upper class. However, in attributing a large share in the depression in marriages to the increased standard of living, he had included all classes; and if Mr. Bourne called the increased standard of comfort in the working classes luxury, all he (Dr. Ogle) could say was that he hoped luxury would go on increasing. There was another remark of Mr. Bourne's, to which he could not assent, and that was, that it was a stigma on the working men to say that they married preferentially women who were earning money; surely this was not peculiar to the working classes, and for his part he did not think it was any stigma on a man to say that he did not marry until he and his wife had enough to live on and support a family; indeed, he thought it an act of praiseworthy prudence in a working man to marry a woman who could add to the family income. As to the remark that restrained matrimony produced social evil, he would not dispute this, but over-population in his judgment produced incomparably greater evils. As to the President's criticisms on the table of mean ages, that miners became miners earlier than professional men became professional: this was true, but precautions had been taken to meet this, as would be found on reference to the official report from which the table had been taken; and he would, as the President suggested, add a note to the paper, when it came to be printed, explaining this.

A vote of thanks to Dr. Ogle terminated the proceedings.

The RELATIONS between INDUSTRIAL CONCILIATION and SOCIAL REFORM. By L. L. PRICE, ESQ., M.A.

[A Paper read before Section F of the British Association for the Advancement of Science at Newcastle-upon-Tyne, September, 1889.]

It is a pleasant privilege to be allowed to discuss in Newcastle the important question of the peaceful settlement of industrial disputes. We who live in the south of England are accustomed, some with envy, others perhaps with misgiving, to look upon the towns of the north as the typical representatives of advanced opinion; and I think that the industrial district of which Newcastle is the centre may not inappropriately be regarded as leading the way in the special department of reform we are about to consider. I am indeed aware that during the last few years the peaceful settlement of industrial quarrels has been subjected to a very severe strain on Tyne-side;¹ and it may be that it has not passed through that strain entirely unharmed. But I nevertheless believe that it is by no means extravagant to assert that it is in the north of England more than anywhere else that the methods of avoiding strikes and lock-outs—the wars of the industrial world—by means of conciliation, by mutual discussion and agreement, that is, between representative masters and men—by arbitration, or the reference of the quarrel to the decision of some third and neutral party—by sliding scales, or the selection of a “standard wage” and a “standard price,” and the determination of the manner in which variations in the former are to depend “automatically,” if we may say so, on variations in the latter—I believe that these different methods have been exemplified in greater variety within the limits of a defined industrial area, have been carried out with more completeness, and have had perhaps more serious and manifold difficulties to confront in the north of England than anywhere else. If their failings have been revealed by the pitiless logic of facts, their virtues have also been brought into prominence; and I am not sure, although this may indeed seem a paradox, that the peaceful settlement of industrial disputes does not owe as much real and permanent advance to the former process as to the latter. In no subject, at any rate, are the lessons of experience—both bitter and pleasant—likely to be more important and helpful.

I do not propose to-day to examine into the details of concilia-

¹ In the Northumberland coal trade the sliding scale previously in existence was terminated in the winter of 1886-87, and a protracted strike followed.

tion, or arbitration, or the sliding scale. I intend rather to confine my attention to some considerations of a general—and perhaps academic and theoretical nature—on the character of the relations existing between industrial conciliation—using the term in a wide and comprehensive sense—and general social reform. I do so both because this seems to me to be the only attitude which a student who has not the most recent acquaintance with the facts can with propriety or advantage adopt; and also because such considerations may perhaps furnish material for useful and interesting discussion.

There is, then, one conclusion to which, I think, the study of social and industrial questions—on its theoretic no less than on its practical side—must lead in the long run, if it be pursued with sufficient thoroughness and open-mindedness; and that conclusion is that social and industrial reform is, in the last analysis, dependent on moral reform. I remember to have seen in a London newspaper some few months ago a quotation from a speech delivered by a Norwegian thinker,² whose fame and philosophy are gradually obtaining recognition in other countries besides his own. He says: “Mere democracy cannot solve the social question. An ‘element of aristocracy must come into our life. Of course I am ‘not thinking of the aristocracy of birth, or of the purse, or even ‘of intellect. I am thinking of the aristocracy of character, of ‘mind, of will. That alone can make us free.” In other words, to put this stirring language into prosaic shape, social and industrial reform is inseparably connected with moral reform. It has often been said—so often that it is sometimes impatiently dismissed as a threadbare truism—that you cannot make a people moral by Act of Parliament. But while such an assertion fails to afford any adequate excuse for a policy which it is often employed to shield—a policy of pure unadulterated *laissez-faire*—and while it is well-nigh as unreasonable to attribute nothing as it is to attribute everything to the influence of governmental machinery and legislative regulation, yet there is a measure of truth in the assertion which in these days we are sometimes inclined to neglect. The high pressure speed at which our railway engines carry us on the “race” from one part of the country to another, at which the machinery in our factories is worked, the business in our markets and on our exchanges transacted, has infected—as is only natural—our hopes for the future, our verdict on the experience of the past, our opinions and ideas of the present. We are a little inclined to be impatient with slow results. We are prone to have recourse to plans which promise immediate and gigantic consequences; and the natural outcome of this is that we are disposed to pay more attention to the “machinery” of social and industrial reform than

² Henrik Ibsen.

to the "material" of human nature with which reform has to deal. All experience teaches us that human nature changes slowly—bit by bit—and yet in our impatience we are either inclined to believe that it may be changed with rapidity and completeness; or, if we find that this is impossible, we throw up our hands in despair, and exclaim that it is futile to attempt to change it at all. And yet more sober and continued reflection might show us—in the words of a political thinker fresh from the observation of men and manners in that "American Commonwealth,"³ which has seemed to some to hold out the highest hopes of human improvement, and to others to furnish material for not a little despondent pessimism—it might show us that "though the ascent of man may be slow, 'it is also sure;'" and that, while sudden and complete change in human nature is really as impossible as it would be dangerous, gradual and partial change is not only possible, but can hardly be avoided.

Let me apply these general considerations to the subject immediately before us. In connection with the narrower as with the wider question, we find persons who have held the extravagant belief that, once the machinery for the peaceful settlement of industrial disputes has been provided, industrial strife will become unknown; and we also find persons who, confronted with the failure of this machinery, perhaps in one, perhaps in more than one instance, have abandoned their belief with the same absoluteness and precipitancy as they manifested when first they adopted it. They tell us despondently—not to say dogmatically—that all these methods of securing the peaceful settlement of industrial disputes are mere makeshifts; that conciliation has not made much way, and is confined to a comparatively narrow industrial area; that arbitrators' awards have proved ineffectual to prevent in some cases the continuance, in others the early renewal, of strife; and that the sliding scale is complicated in detail, and limited in application. They first ignore the material of human nature to be dealt with by the machinery in which they have reposed such implicit confidence; and then—by a not unnatural reaction—they attach such exclusive importance to the material of human nature, that they believe that it cannot be brought at all under the influence of the machinery. In reality the one attitude is as unreasoning and as truly illogical as the other. If it is wrong to neglect the material of human nature, it is equally wrong to nullify the power of the machinery supplied in conciliation, in arbitration, and in the sliding scale, to handle and to modify that material. Human nature being such as it is, we must be prepared to discover occasions when the machinery works with difficulty, and sometimes stops altogether;

³ Cf. Bryce's "American Commonwealth," vol. iii, p. 685 (1st edit.).

but we may still retain our belief in the possibility of bringing that human nature into greater accord with the machinery, and of improving the machinery itself so as to make it fulfil its purpose better, and we may hold that familiarity with the machinery tends to expedite these results.

And so we must not attach too much importance to the efficacy of conciliation, or arbitration, or the sliding scale. It is possible that differences may arise between masters and men meeting round a table, and engaged in frank and friendly discussion, which do not admit of peaceful adjustment. It is possible that the temper or claims of the representatives of masters and men before an arbitrator, or of their constituents, may on occasions be such that the arbitrator's award fails to secure a lengthy, or even a brief, respite from industrial contention. It is possible that times may come, or circumstances arise, when a sliding scale appears to the one party or to the other to work with an excess or deficiency of automatic regularity. It is nothing more or less than a truism—though it is a truism which, like many others, is often forgotten—to observe that the tone and temper with which the two parties meet one another are likely to be the tone and temper with which any agreement they arrive at is accepted or observed. The machinery depends in a large measure on the material for its easy and effective working; and the general attitude of men and masters towards one another is beyond comparison far more important than the establishment, or the detailed arrangement, of conciliation, of arbitration, or of the sliding scale.

But if, on the one hand, these considerations of human nature supply the corrective to excessive confidence, they are equally incompatible with extravagant pessimism. Human nature may not admit of sudden and complete change, but it does seem to allow of partial and gradual modification. And, again, if the material may sometimes arrest the orderly working of too advanced machinery, it may also be possible to deal with it by means of machinery which may in some parts be defective; for successful results depend on the material even more than on the machinery. It may then be the case that it is difficult to obtain accurate data for an arbitrator, or to determine by theoretical considerations⁴ what should be the exact nature of the principle on which his award should be based, or an agreement arrived at at a board of conciliation, or a sliding scale established. But these difficulties may really become less formidable than they appear, if only there be a favourable tone and temper evinced on either side. And,

⁴ Cf. a paper by the present writer on "The Relation between Sliding Scales and Economic Theory," read before the British Association, at Bath, and printed *in extenso* in the "Report" for 1888, p. 523, &c.

once more, it may be that the matter in dispute can be determined, and determined alone, by the "higgling of the market;" but a frank, if not friendly, buyer and seller, will come to terms with a rapidity and ease which admit of no comparison with that possible when buyer and seller are, and are determined to be, relentless foes. If the moral reform be accomplished, the social and industrial reform will easily follow.

And, if we look around us, we can hardly refuse to recognise that there are the elements of a moral reform, that there has taken place an improvement in human nature as between masters and men. In measuring this improvement the student enjoys one of the few advantages he possesses over practical men. He can stand aside from the din and turmoil. He can take up a post from which he can quietly observe; and he may detect signs of progress which are almost invisible to those who are actually engaged in the conflict. Now it is impossible to look into any economic treatise without discovering that it bears some testimony to the change which has been effected in the relations of employers and employed. And it is certainly impossible to review the aspect of practical affairs from almost any standpoint without being conscious of influences tending in this direction. We must not indeed entertain extravagant expectations. We must not imagine that the industrial reform will do more, or much more, than keep pace with the moral reform, if it will even do as much as this. And bearing in mind how comparatively recent is this improvement in the relations between masters and men, how bitterly their interests are opposed to one another in some matters, however much they may be in real accord in others, how suddenly changes of considerable magnitude take place in the conditions and prospects of particular industries, or of general trade, in modern times, how difficult, if not impossible, it is, on purely theoretical grounds, to establish any standard by which industrial disputes can be adjusted, save some such standard as a relation between the wages of the workers and the selling prices of the commodities as has become traditional—bearing in mind all these circumstances, we should be quite prepared to find that conciliation has not made much way, and is confined to an area narrow by comparison with the whole field of industry; that arbitrators' awards have sometimes failed to prevent the continuance, or the early renewal, of strife, and that the sliding scale is comparatively limited in application. Its complexity indeed may, as we shall see hereafter, be as much an advantage as a drawback.

Let us notice then the signs of change and improvement in the relations between masters and men. I am going to select for exclusive consideration one of the most obvious, and, to my mind,

perhaps the most important and characteristic, of those signs. No one, I venture to assert, who reads his daily or weekly newspaper, no one who engages in conversation outside a very limited circle, can fail to observe a change, more marked in some places, less noticeable in others, in the tone and temper with which the objects and the action of trades unions and trades unionist leaders are now discussed. I do not deny that you may discover some quarters—and those not a few—where the most bitter hostility is felt and displayed—and perhaps not entirely without reason—towards those organisations. But I do nevertheless believe that any candid and intelligent observer will agree that a change has passed over the tone and temper of general conversation and general opinion with regard to the matter. And it has found, or is finding, its way into theoretical treatises. For it is impossible to establish such a divorce of theory from fact as the theorist who looks with contempt on the practical man, or the practical man who despises the theorist, would fain persuade us exists. Theory is acted upon by practice, and in its turn reacts on practice; and it is undoubtedly evidence of no little value of a change in practice, when we find economists in various countries—Professor Marshall, for example, in our own, M. Leroy-Beaulieu in France, and we may almost say a whole school of thinkers in Germany and in America—recognising, some in a fuller, some in a narrower, sense, that there is a sphere, and legitimate and definite sphere, for trades unions to occupy, even in the theoretical determination of market, if not normal, wages; that they may give to the workman the position of a strong and combined, instead of a weak and isolated, seller of labour, and that they may enable him to hold out for a reserve price. I think, then, that we may take this change in the general tone and temper of society as admitted and irrefutable.

But what does this imply, interpreted in the most limited sense? It implies that employers are more disposed to meet on terms of equality representatives of working-men. It implies that public opinion—a force for good or for evil, the potency of which, if once thoroughly awakened, it is impossible to deny—it implies that public opinion will sanction, nay will encourage, and will exercise some moral compulsion in order to bring about that meeting. And it also implies that trades unions, occupying a position of acknowledged importance and responsibility, will become more sensible of the duties of that position, will be more ready to abandon an attitude of determined hostility, will be more disposed to court publicity and to enlist public support and sympathy, will be more inclined to oppose argument to argument rather than force to force, and to convince public opinion that the strength of the argument, not merely of the force, lies on their

side. And here once again public opinion cannot fail to exercise some moral compulsion. It may be weak, it may be strong, but it will beyond a doubt increase with succeeding years.

But not only does this change in the general tone and temper of conversation and opinion promote and indicate a moral reform, which is the essential condition of industrial reform; but it is also of immense practical importance in facilitating the smooth and effective working of the particular machinery of reform known as conciliation, or arbitration, or the sliding scale. It disposes masters and men to be conciliatory; it inclines them, if they cannot come to an agreement themselves, to be willing to refer the decision of the matter under dispute to a neutral arbitrator; it induces them to seek for some means by which occasions of quarrel may be avoided, for a time at least, through the automatic operation of a sliding scale. But it does more than this. It is clearly impossible that negotiations, whatever form they may take, and whatever be the character of the arrangement in which they result, can be conducted with ease or success unless a few representative negotiators are selected on either side. But a trade union supplies a basis for the representation of the men, and imposes a binding force on the represented, which it is difficult to secure by any other satisfactory means. And so a change in the tone and temper with which trades unions are regarded implies greater facility for effective representation.

But here again we must not neglect the material of human nature. I will not trespass upon the considerations suggested by recent events in the Northumberland coal trade, more than to say that they afford a singular contradiction to that idea of trades unionist leaders as the promoters of strife which is still current in some quarters; and that they show us that there may be cases where the opinion and advice of the leaders is unable to prevail against an impulse on the part of their followers, and that, even when we have secured representation, we have not done everything. Our anticipations may conceivably be upset by the incalculable elements of human nature. We ought not indeed on that account to depreciate the importance and value of representation; but we must not expect too much from it, or be excessively discouraged if on occasion it fails.

And this leads me to notice another aspect of the general considerations we have been discussing. Although machinery is not everything, yet it is something; and it is not difficult to point out some of the ways in which methods of securing the peaceful settlement of industrial disputes may help to modify that human nature on which the possibility of that settlement ultimately depends. It is the merest folly not to recognise that if you can

once induce masters and men to meet round a table avowedly for informal, and, if possible, friendly and effective discussion, you have not merely afforded the machinery for that discussion, but you have helped to implant a habit of resorting to it in lieu of a struggle of force, you have affected—it may be in a greater, it may be in a less degree—the attitude of the one party to the other, you have established a presumption in favour of mutual arrangement, you have contributed to influence human nature for good. Or again, if the two parties refer the matter under dispute to the decision of a neutral arbitrator, they have by the mere reference taken a step which they can only retrace with some difficulty; they have to some extent committed themselves and their constituents to abide by the arbitrator's award; they have in some measure, though it be only in a slight measure, accustomed themselves to the possibility—though not I suppose to the probability—of an adverse decision; and, though they may argue their case with copious, and indeed with contentious, insistence, though they may expect that the award will go in their favour, until they are undeceived, though they may accept the decision with sullen reluctance, if not with outspoken irritation, yet they have familiarised themselves with the machinery, they have incurred an obligation binding in honour, if it is not in legal force, they are conscious of the feeling that their reputation is at stake if the award is disobeyed, they have contributed to produce some change—though it be but a small one—in human nature. They are not quite the same men after the reference to arbitration as they were before. And, lastly, in the case of the institution of a sliding scale results somewhat similar to these are achieved. A relation between the wages of the workers and the selling prices of the commodity, or between the former and a combination of the latter with other circumstances of production, has received the sanction, for a time at least, of a formal arrangement, and has so far been recognised as fair and traditional; an automatic adjustment of matters which might otherwise have occasioned contention has for some time at least been in operation, and has so far become familiar; a harmonious concord has for some time at least enjoyed the benefit of being the rule, to which a quarrel is the exception; and human nature cannot fail to have been to some extent modified. The machinery of industrial peace—whether it be provided in the form of conciliation, or arbitration, or the sliding scale, or of a mixture or development of any of these varieties—may effect but a little change in human nature, and may afford the occasion for as much despondent pessimism over its failures, as it supplies by its successes the material for sanguine optimism; but it is nevertheless to be cordially welcomed if it effects any change at all; and

there can be no possibility of doubt about the advantage, if we do not add the necessity, of making the machinery as easy and effective in working, as perfect and complete in detailed arrangement, as we possibly can. It may be indeed, as we saw before, that its deficiencies are, in the light of an improvement in human nature, not so important as we might imagine; but there can be no question that it is desirable to reduce their number, and diminish their magnitude.

This may be done by dint of patient investigation and lengthened and varied experience; but, preserving that attitude of general reflection which we took up at the outset, we may say that the one quality above all to be desired, if indeed it be not indispensable, in the machinery of industrial peace, is elasticity, or, to adhere more closely to the metaphor, adjustability. And this quality we may understand in more than one sense. The machinery must be capable of adjustment to the varying circumstances of trade; it must also admit of adjustment to the varying circumstances of each particular industry, and to those which vary from one industry to another; and fourthly and lastly, it must allow of adaptation to varying stages of improvement in the relations between masters and men.

If there is one fact more than another which the comparatively brief history of sliding scales has brought into prominence, it is, I think, that friction and irritation are likely to arise when the arrangements of the sliding scale produce, or seem to produce, a lengthy interval between changes in prices and consequent changes in wages. From the nature of the case it is clear that some such interval there must be, that the prices can only be ascertained after they have been realised, that it would be a waste of time and expense for the accountants—appointed, as the case may be, by one, or by both sides, to examine into the books of some or all of the masters—to make this examination and declare the resulting average price with too great frequency. But on the other hand the changes in wages should, it would seem, follow on the changes in prices with as much celerity as is conveniently possible. There may be arrangements of the details of a scale which may facilitate a more perfect and speedy adjustment of wages to the real circumstances of production—such as, for instance, a more rapid fall in wages when selling prices have fallen to, or below, the expenses of production—but it is not my purpose at present to enter upon a discussion of detail. The principle alone it is on which I am concerned to insist—the principle true and important, on theoretic no less than practical grounds—that the provisions of a scale should permit of a correspondence which can be effected with as much rapidity and completeness as is possible between the

wages of the workmen and the actual contemporaneous circumstances of production. It is for these reasons that conciliation—with free, informal and speedy discussion and decision between masters and men, is to be preferred to the more elaborate, formal, and necessarily lengthy proceedings before an arbitrator; and that the intermittent awards of an arbitrator, or determinations of a board of conciliation, are to be placed on a lower level of advantage than the automatic and sustained regularity of a sliding scale. Conciliation affords more opportunity for frequent discussion and rapid decision; a sliding scale, during the time of its continuance, obviates the necessity for discussion or decision at all on major points. It is from this point of view as superior logically to conciliation; as conciliation itself is to arbitration; for in this sense it is more elastic—more rapidly and easily adjustable.

But there is also another sense in which methods of securing the peaceful settlement of industrial disputes should be elastic and easily adjustable. They must admit of adaptation to the varied circumstances of different industries. And here we may conveniently divide our reflections under two heads. They must admit of being adjusted to circumstances varying within the limits of a single industry—not merely changing from one time to another, as we noticed before, but also existing contemporaneously in different quarters—and they must also allow of adaptation to circumstances varying from one industry to another. This is the point of view from which the complexity of a scale is to be deemed an advantage rather than considered a drawback. For the internal economy of an industry is often as complex in reality, as it may seem to outward appearance to be simple and uniform; and it is therefore important to secure a principle which shall be so simple in its main features that the least educated and intelligent man can understand it, and yet so complex in its detailed application that it can be adjusted to the varying requirements of minutely different circumstances. This has been the case with the sliding scales in the coal and iron industries in England. To an outsider the principle of wages varying with prices, or some other circumstances of production, may appear to be very simple; but, if he inquires into the detailed working of the scale, he is only too likely to be suddenly brought up by the complexity of the particular arrangements. And similarly the difficulties of an arbitrator sometimes commence only when he has to apply a general principle, allowed by both parties to be fair, to the particular details of the question before him; and the advantage of conciliation lies to some extent in the fact that masters and men, recognising the broad purpose for which they are met, and agreeing on some general

principle, bring their knowledge of minutiae to bear on the arrangement of complex details.

Similar observations might be made on the need of adaptation to the varying circumstances of different industries. There may be some to which the principle of a sliding scale is not easily applicable, at any rate according to the form which has prevailed in the coal and iron mining industries, where the selling price of the commodity affords a tolerably adequate index of the changes which should be made in wages if employers and employed are to reap jointly the benefit, and sustain jointly the injury, of increased or diminished prosperity. There may be industries again which are not sufficiently advanced, so far as the feeling between masters and men is concerned, to permit of an arrangement so comparatively permanent and automatic in character as a sliding scale, but in which nevertheless it is possible to establish with immediate success and a fair prospect of permanence, a board of conciliation. And once more there may be industries where masters and men are not prepared to meet habitually with the object of settling their differences by free and friendly discussion, but will on occasion agree to submit their quarrels to the decision of a neutral arbitrator. Again, there may be varieties in the details of a scale, or of the constitution of a board of conciliation, or of the procedure of a court of arbitration, which may assume a different shape as we pass from one industry to another. Some may be suited to one, and ill-adapted to another. Or, once more, there may be in some industries a combination of two or more of the different methods we have enumerated; for they are not of course mutually exclusive. The basis of a scale may be determined by conciliation or arbitration, and joint committees of masters and men may, during its continuance, adjust themselves, or refer for decision to an arbitrator, differences on minor matters. Or, again, the constitution of a board of conciliation may allow, if it does not actually provide, for the occasional intervention of an arbitrator; and the procedure of a court of arbitration does not necessarily exclude a resort to conciliation. Surely there can be no doubt that the methods of securing the peaceful settlement of industrial disputes must, if they are to be successful, be varied and capable of adaptation to varied and varying circumstances; and with equal assurance we may assert that they do admit of this variation.

And—and this is the last point I propose to consider—it may be the case that a method which is suited to one period in the history of an industry, and of the relations prevailing in it between masters and men, may be unsuited to another. It may be, and apparently is the fact, that arbitration has in some cases paved the way for conciliation, and conciliation for the sliding scale; and the

sliding scale may in its turn have to give place to a more advanced method of attaining and preserving industrial peace. In logical order of thought, and in reference to varying stages of improvement in the relations between masters and men, it would seem that the sliding scale is superior to conciliation, and conciliation to arbitration. But here, once again, we must not forget the character of that material of human nature with which the more, equally with the less, advanced machinery has to deal. We must remember that human nature changes not merely gradually, but also bit by bit; and we must therefore expect to find some persons, and classes, and industries, at a more advanced stage in this respect than others, and therefore more able to appreciate and practise the more advanced methods of industrial reform. All the many varieties—arbitration, conciliation, the sliding scale, and perhaps other means yet undiscovered, of preserving industrial peace, and of promoting industrial reform—may have a sphere in which, without interfering with the contemporaneous adoption elsewhere of others, they may be profitably and successfully applied; for human nature is complex and varied, and changes gradually, bit by bit.

It is this consideration which makes us distrust from the outset those who proclaim their own pet scheme of reform as a panacea, and condemn all other schemes as partial and inadequate. We distrust them because we are conscious of the immense variety of human kind, and we therefore believe in the catholicity of social reform. It may be easy to point out defects in the present wages system; it may not be difficult to show that conciliation, and arbitration, and the sliding scale, fail to administer a complete corrective to these defects; it may not be impossible to prove conclusively that systems, such as those of profit-sharing and co-operative production, furnish a more thoroughgoing solution of the difficulties of the wages question, and that there are tendencies in the methods we have been considering, which, fully developed, might issue in those more advanced systems. All this might be urged, and urged with reason; and yet we might reply that the present wages system is not only widely prevalent in fact, but is in a sense natural in theory; that the obstinacy with which human nature makes its failings evident in the imperfections of conciliation, or arbitration, or the sliding scale, might conceivably occasion disappointment to the hopes which had been formed of profit-sharing or co-operative production; and that there are also tendencies in the former methods which, fully developed, would seem to be incompatible with the latter systems. We might reply in some such fashion as this; and yet I venture to think that the safer and more conclusive answer would be to point to the variety of human kind, to the capacity of human nature for gradual and partial

modification, to its aversion to sudden and complete change, to its liability to undergo a reaction in the contrary direction as sudden and complete as the original impulse it has first received. In the light of these considerations it seems more probable that future, as present and past, industrial society will present manifold diversities, that although in some quarters, with an improvement in human nature, a place may be found for the more advanced systems of profit-sharing and co-operative production, yet in others the wages system will still prevail in its simplicity and variety, and in others again conciliation, arbitration, and the sliding scale, perhaps improved and developed, will be discovered.

The ideal attitude of the true social reformer may, I venture to hold, be described most appropriately as at once catholic and critical, ready to examine all promising schemes, and to listen to all reasonable proposals, prepared to make allowance for the enthusiasm which, while it is necessary to carry any scheme successfully into effect, is also calculated to make the proposer neglect its difficulties, and overrate its advantages, but resolved also to scrutinise severely the claims of these different plans in the dry light of past and present experience, and inclined to discredit the professions of proposals which promise sudden and complete changes in human nature, and to repose more faith in plans which appear more excellent in their performance than they are ostentatious in promise, which hold out a fair prospect of effecting some gradual change in some parts of human nature, which neither ignore nor magnify the difficulties with which every scheme of social reform is confronted. We want, in short, in the department of social and industrial reform, more of that "animated moderation," which Bagehot⁵ used to regard as desirable, and as the typical characteristic of the ideal English man of business—not content to remain still, and yet not afraid of being called illogical if he has gone to a certain length on any path of reform or action, and has refused for the time to proceed further. By taking up such an attitude we may incur the hostility and contempt of extreme individualists and extreme socialists alike; by both our position may be termed illogical, and deemed halting; but it has yet, I believe, to be shown that in social and industrial reform a *via media* is not as possible and advantageous as it is truly logical and characteristically English.

⁵ "Physics and Politics," p. 200.

MISCELLANEA.

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I.—*Wages in the principal Textile Trades.*

THE following is the General Introduction and the Summary and Conclusion of the Report to the Secretary of the Board of Trade, on the Return of Rates of Wages in the principal Textile Trades in the United Kingdom. Taken from the Parliamentary Paper [C-5807], 1889:—

“ *General Introduction.*

“I have the honour to submit herewith the first instalment of the results of the census of wages, which was one of the principal tasks, if not the principal task, undertaken by the Commercial Department of the Board of Trade in carrying out the resolution of the House of Commons of 2nd March, 1886, for the collection of statistics relating to labour. The returns herewith relate to the rates of wages in the principal textile trades of the country, one of the great divisions of the national industry. A long time has elapsed since the work commenced, and it will be many months before the publication can be completed; but in the absence of a sufficient staff to execute the work with the speed desirable, it has been thought preferable to incur all the inconveniences of delay rather than place results before the public in a hurried and imperfect manner. Much waste has in the past been occasioned by the publication of returns of wages which have neither had an adequate statistical basis nor have been prepared with the application of proper statistical methods. It has now been felt as above all things important, that an attempt should be made to provide an adequate basis, and to apply proper methods in executing the work.

“Before dealing with the special subject of the accompanying returns, some explanation may be given of what the department has attempted, and what has now been in part effected, in comparison with what has been tried in previous returns of wages.

“For certain purposes statements of wages are made easily enough, and such statements are continually being circulated. In the engineering trades, in the building trades, and many others where there are strong unions, the central office of the union and the branches get to know the current rates of money wages in different localities for different types of workmen. To those who know the trade these returns of rates of wages have undoubted

practical value. Similar statements have also been published from time to time officially by different Governments. In the Australian colonies such statements are published in the annual bluebooks, and information of this kind is to be found in abundance at the Emigrants' Information Office under the Colonial Office. Similar statements have also been made use of by the Board of Trade in their *Miscellaneous Statistics*, the compilers of the information being the chambers of commerce in the respective industrial districts of the country. In France there are statistics of wages of a similar character, and our own bluebooks, as well as the parliamentary literature of other countries, contain an immense quantity of the like information. It is probable also that such returns, when sufficient intervals of time elapse, and proper methods are applied, may yield, in the absence of something more complete, comparative results of a most valuable kind. But where all such statements are lacking in a statistical view, is that no attempt is made in them to connect the rates of wages with the proportionate numbers paid at each rate, either in a particular trade or in the general industries of the country—the points which are perhaps of most importance, not only for statistics, but in any study for comparative purposes of the general condition of the country at different times. Without disparaging at all the utility of such returns as have been obtained hitherto, statisticians have long felt that there must be something more.

“What that something more is, is also shown in attempts which have been made by two eminent statisticians in this country, Mr. Leone Levi, and Mr. Dudley Baxter, working with most imperfect materials. The former in 1867, and again in 1885, using the Board of Trade *Miscellaneous Statistics* as the basis of his wages rates, and the census as his authority for the numbers of the population, and using therewith the results of private inquiries as to rates of wages prevailing, and the numbers paid at each rate, endeavoured to bring out a total for the income of the working classes throughout the country, showing, of course, the average income per head. The latter, working in a similar manner, and using returns in connection with those of the income tax, endeavoured to show the average incomes of the people from the highest to the lowest, and those of the different classes separately. In form both works were excellent. The results must also be useful for comparison for many a day. But the data were deficient, and the authoritative basis was wanting which would have made them more useful.

“It is to fill up the void thus left at which the department aims. The statistical method must be generally the same as that of Mr. Leone Levi and Mr. Dudley Baxter. But these gentlemen, from the want of data, were often obliged, in order to arrive at any results at all, to make estimates or even guesses from very imperfect materials. It is now hoped that there will be a more ample, and indeed a very complete, basis, so that the results will be beyond dispute; the information being accurately obtained for the present time, and the foundation securely laid for many future comparisons.

“The general steps already taken to carry out the work may also be briefly described. In 1888 a memorandum was prepared in the department as to the progress of the business of compiling labour statistics¹ which included, in continuation of previous returns, a statement of the number of circulars and schedules that had been issued to the different trades of the country, and the replies received; and a further statement of that kind, brought down to the present date, will be found in the Appendix to this Report. From this it appears that it all 79,041 schedules have been issued, and of these 10,681 have been returned, the replies being thus 14 per cent. of the total and the proportion of the total industrial population thus dealt with being even greater, it is believed, than the proportion of the number of schedules returned to the total issued. In any case a very large mass of the population is dealt with in the returns, and the proportion returned to the total employed is found in the textile trades generally, it will be seen, to be over 25 per cent.

“Many months were occupied in preparing and sending out the schedules, which were of a most elaborate kind, as the variety of occupations in the returns submitted herewith will show; while there were no fewer than 172 different kinds of schedules, which had all to be prepared after communication with leading firms in each trade, as well as in some cases with the Chief Inspector of Factories, Mr. Redgrave, C.B., to whom the department is greatly indebted for assistance. When the returns came in, moreover, the staff at the disposal of the department was so small that it was impossible to do more than file the returns for many months, the real work of compilation only becoming possible about a year ago. It is expected now, especially after the experience gained, to proceed with the compilation more quickly than has yet been possible, but the labour is excessive, and the results obtained so far have only been possible in consequence of the greatest energy, assiduity, and labour beyond office hours on the part of the staff employed.

“In the textile trades which are now dealt with, the number of schedules issued and returns received were altogether as follows:—

	Schedules Issued.	Schedules Returned.	
		Number.	Per Cent. of Issues.
Cotton.....	2,080	542	26
Woollen	1,807	291	16
Worsted	452	121	27
Linen	803	149	18½

“It will also be evident from the returns that a considerable part of the population engaged in the textile trades is practically dealt with in the schedules returned. The following is a comparison on this head:—

¹ See No. 433, Sess. 1888.

Factory Population in the Textile Trades according to the Factory Return, 1885, compared with Numbers comprised in accompanying Returns.

	Total Employed.	Numbers Returned.	Proportion Returned to Total Employed.
			Per cent.
Cotton.....	504,000	143,000	28
Woollen	139,000	37,000	26
Worsted	138,000	36,500	26½
Linen	112,000	40,000	36

“In other words, more than a fourth part of the factory population in the trades concerned is dealt with in the schedules that are here analysed. It is submitted that with all drawbacks a fairly effective return as to more than one-fourth of the number engaged in the textile industries—and that fourth not selected in any way, but taken promiscuously from each district—appears to supply a most ample statistical basis as to the average wages in those trades.

“Another preliminary explanation of a general character may be made. The schedules sent out asked for information in two different ways. The principal part of the schedule asked for a return of the weekly rates of wages actually earned in a particular week in October, 1886, by the numbers actually at work in that week, divided according to the varied classification of their occupations, and distinguishing in all cases the wages paid to men, to lads and boys, to women and to girls, respectively,—half-timers it will be seen being also distinguished. In each case a distinction is also made between wages earned by ‘piece’ and wages earned by ‘time’ work. The numbers and rates of wages for each occupation were also required to be distinguished, and in many of the schedules returned the actual numbers at each rate were stated, so that maximum and minimum, as well as average, rates could be deduced. From this it was intended to build up a general scheme of the actual earnings in each employment in what was an actual average week in most trades, without any attempt to exhibit what those drawing up the return might consider to be a normal wage. What was wanted was an average week about the date mentioned, from which, multiplying by 52, and making any farther deductions that might seem expedient, an average year’s income might be calculated. The other part of the schedule asked for a return from each employer of the whole amount paid in wages in the last calendar year which had elapsed before the schedules began to be sent out, viz., 1885, and also particulars of the highest amount paid in one week with the numbers paid in that week, and also of the lowest amount paid in one week with the numbers paid in that week. From these particulars it was hoped that some means would be obtained of verifying the average character of the week in October to which the more detailed particulars of the schedule relate, as well as some means of estimating the differences between maximum, average, and minimum employment in the

trades concerned. It was hoped, according to statistical rules, that although the maximum and minimum figures would in particular cases, owing to special circumstances, be exceptionally high or low, yet the result on the average would be trustworthy, while the week in October, if really an average, would give results intermediate between the maximum and minimum. On the whole, fairly satisfactory results have been obtained; the results shown by the two different parts of the schedules, when compared in a mass, tending to confirm each other. Some difficulty was caused at first, when the returns came in, by some firms having given as a minimum week what was really a holiday week, but in spite of all drawbacks a sufficient number of returns for comparison was obtained.

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“ Summary and Conclusion.

“ Comparing the different average rates of wages in the different leading textile trades here dealt with, we get the following result; the comparison, it will be understood, being the wages of a normal week, multiplied by 52 for the annual earnings, and no deduction being made, such as would be required, as above explained, to show the actual annual earnings for a year of the population employed.

Comparison of Normal Wages in the Cotton, Woollen, Worsted, and Linen Trades in 1886.

	Cotton.	Woollen.	Worsted.	Linen.
	ANNUAL.			
	£ s.	£ s.	£ s.	£ s.
Men	65 12	60 –	60 13	51 13
Lads and boys	24 4	22 –	16 18	16 4
Women	39 15	34 9	31 –	23 3
Girls	17 17	19 7	16 –	12 17
	WEEKLY.			
	s. d.	s. d.	s. d.	s. d.
Men	25 3	23 2	23 4	19 9
Lads and boys	9 4	8 6	6 6	6 3
Women	15 3	13 3	11 11	8 11
Girls	6 10	7 5	6 2	4 11

“ The superiority of cotton on this showing is manifest, but except as regards linen it is not a great superiority. The differences, such as they are, as above explained, are also largely due to the different geographical distribution of the different trades. Linen is largely a Scotch and Irish industry, and even in

England it is carried on largely in country districts and not so much in large manufacturing centres as the other industries with which it is here compared. The earnings are accordingly less on the average than in the other leading textile trades which are carried on more largely in large towns or in the central localities of Lancashire and Yorkshire.

“In considering these averages it has also to be remembered that on the whole, as above explained in detail, the bulk of the manufacturing population earn nearly the average rates; that the numbers at extreme rates on one side or the other are not large.

“When matters are further advanced, and similar facts to those here collected are published as to other trades, it may be possible to enter into the question of building up from them the total of the aggregate earnings of the working classes. This involves, however, most difficult questions as to the numbers of the working population in each trade. For the necessary particulars recourse must be had largely to the census, and the census unfortunately is not in such a form as to be readily comparable.

“But the rate per head for the whole country may nevertheless be very fairly established, although the exact numbers of the working population may not be so easily ascertained, within even 10 per cent. of the true numbers, to whom the rate per head can be applied so as to obtain the aggregate earnings. It is obvious even now that the averages established for the great textile industries are for so large a mass of the population that they are not likely to depart widely from those of the general average. As one industry after another is dealt with after the plan here followed, the mass represented will steadily increase, and the limits within which the true average must lie will be narrowed.

“Of course it will be understood that the above rates are for a period a few years ago, since which, and especially within the present year, an advance in wages has taken place. But it is inevitable in any work so new as the present that the facts published must be behind the actual present.

“Probably, owing to the great difficulty of the work, such delays will always be more or less unavoidable. The special value of the work, however, does not depend upon its actual speaking for the present time; it is a foundation from which other comparisons can be built up. Anyone acquainted with the trades concerned would have no difficulty in arriving at present averages from the basis here laid down by allowing for the percentage of advance which he knows to have taken place.

“Reference has already been made to the assistance given by Mr. Redgrave, the Chief Inspector of Factories. The department also desires to acknowledge specially the assistance given by manufacturers in making returns and giving explanations when asked. These returns in many cases were most elaborate, and must have cost a great deal of labour, but they have been most valuable, leaving no doubt in the opinion of the department as to the trustworthiness of the figures submitted to them.

“As already stated, other parts of the census of wages are in an advanced state of preparation, and will be issued next session.”

II.—*The Uniformity of the Census of Australasia in 1891.*

WE have received from the Government Statistician of Tasmania a copy of the following Report of a Conference of Statists held at Hobart in March last:—

Members of the Conference—

H. H. Hayter, Esq., C.M.G., Government Statist (Victoria).

R. M. Johnston, Esq., F.L.S., Government Statistician (Tasmania).

T. A. Coghlan, Esq., A.M.I.C.E., Government Statistician (New South Wales).

H. J. Andrews, Esq., Under Secretary (South Australia).

E. J. von Dadelszen, Esq., Deputy Registrar-General (New Zealand).

Consulting Member—E. C. Nowell, Esq., formerly Government Statistician, Tasmania.

Secretary—Thos. C. Just, Esq.

REPORT.

To the Honorable the Chief Secretary of Tasmania.

SIR,—We, the representatives of various Australasian colonies, at a conference held at Hobart, in accordance with your invitation, for the purpose of arranging for the collection and compilation of the ensuing census upon a uniform principle, have the honor to report as follows:—

1. We have held twelve meetings, the minutes of which will be found in Appendix A.

2. The enquiries to be embodied in the census schedule have been fully discussed, and we have agreed to certain recommendations on the basis of which we have framed a model schedule, a copy of which is given in Appendix B.

3. In view, however, of the possibility of its being found desirable to make alterations in the wording of this schedule after the Census Act has been passed, in cases where the passing of a Census Act is necessary, we have unanimously resolved to recommend that only the heads of enquiry—not the schedule—be embodied in the Census Act.

4. The compilation of the returns of the census upon a uniform principle has engaged our earnest attention; and, after much deliberation, we have agreed to a series of resolutions bearing upon the subject, the substance of which is given in Appendix C.

5. The forms decided upon, with the exception of those for the occupation tables, have been mainly those followed by most of the colonies in compiling the returns of the census of 1881. We have, however, deemed it desirable to make radical changes in the tables showing the occupations of the people, as those hitherto adopted have been judged to be out of date, and not suitable to the present requirements of the several colonies. After lengthened consideration and discussion, we have devised a system of classification which, we believe, with possibly some modifications to be indicated by future experience, will be found to offer a means of overcoming the great difficulties with which the systematic grouping of the occupations of the people of a country has always been found to be attended. The details of this proposed classification will be found in Appendix D.

6. To facilitate, however, comparisons with the returns of previous censuses, we propose that, in addition to the tables of occupations compiled according to the newly devised system, subsidiary tables be given showing the different groups of occupations, prepared upon the lines of the plan which the new system is intended to supersede.

7. In settling the form of classification under the different heads of enquiry, we have had in view Lord Knutsford's circular despatch of the 28th February, 1889; and have arranged to give effect, as far as possible, to the recommendations embodied in the letter of the Registrar-General of England attached thereto.

8. The system proposed for adoption is calculated to secure uniformity in the tabular statements to be published by the different colonies. This uniformity, however, will not be broken should it be desired to amplify the returns, or bring them out in more extended detail than that provided for, which it is distinctly understood any colony is at liberty to do.

9. We have much pleasure in expressing our sense of the valuable assistance rendered by Mr. T. C. Just in his capacity of secretary to the conference, to which post, by the kind consideration of your Government, he was appointed before our proceedings commenced.

We have the honor to be,

Sir,

Your obedient Servants,

H. H. HAYTER, *President*.

H. J. ANDREWS.

T. A. COGHLAN.

E. J. von DADELSZEN.

R. M. JOHNSTON.

APPENDIX A (omitted for want of space).

APPENDIX B.—CENSUS OF 1891.—HOUSEHOLDER'S SCHEDULE.

(This Schedule is based upon Resolutions adopted at a Conference of Representatives of the Australasian Colonies held in Tasmania during the month of March, 1890.)

[*Caution as to Penalties, &c., to be inserted here.*]

List of the Members of the Household or Family, Visitors, Servants, and Others, who Slept or Abode in this Dwelling on the Night of

<i>Sunday the</i>	<i>day of</i>	, 1891.
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NAME AND SURNAME.	RELATION TO HEAD OF FAMILY.	CONDITION.	SEX.	AGE (Last Birthday).	PROFESSION OR OCCUPATION.	EMPLOYERS OR PERSONS IN BUSINESS on their own account, to write "E."	EMPLOYERS OF LABOUR to state the average number of hands they employ in their business. to write "U."
No person absent on the night of Sunday to be entered.	State whether Wife, Son, Daughter, or other Relative, Visitor, Lodger, or Servant; and in the case of Public or Charitable Institutions, whether Officer, Prisoner, Patient, Inmate, Nurse, &c.	Write "Married," "Widower," "Widow," "Divorced," or "Never Married," against the names of all Persons except Young Children. [Chinese to be set down as never married unless they either have or have had wives in one of the Australasian Colonies.]	Write "M" against Males, and "F" against Females.	The age of Persons over One year to be given in years. If the age be less than One year insert a cross (x).	[Before filling in this Column you are requested to read the instructions on the other side.] The occupation which each person is following and deriving support from at the time of the Census should in all cases be stated. A person engaged in more than one pursuit should state his occupations in order of their pecuniary importance to himself.	Employers or persons in business on their own account, to write "E."	Employers of labour to state the average number of hands they employ in their business. to write "U."
Write after the name of the Head of the Family the names of his Wife, Children, and other Relatives; then Visitors, Lodgers, Servants, &c.							
(Spaces for eighteen entries follow)							
1							
2							
3							
4							
5							

Contd.

APPENDIX B—Contd.

SICKNESS AND INFIRMITY.	WHERE BORN.	RELIGIOUS DENOMINATION.	EDUCATION.	DESCRIPTION OF DWELLING.
<p>If laid up or unable to follow usual occupation by reason of illness or accident, write "Sick" or "Accident," or if afflicted by any of the following infirmities write "Deaf and Dumb," "Blind," "Insane," "Idiotic," "Epileptic," "Paralytic," "Leprous," "Lost a limb or an eye," as the case may be.</p>	<p>State the Country or Colony, not Town, or any other subdivision. If born in Foreign Parts, or at Sea, add whether a British Subject by Parentage or Naturalisation; if in Australasia state which Colony.</p> <p>["C" for Chinese (H.C., Half Caste); "A" for Aboriginal (H.A., Half Caste), after the words "China" or , as the case may be.]</p> <p>[N.B.—This heading to be varied to suit the circumstances of any Colony.]</p>	<p>Do not use general terms that represent more than one Religious Body, such as "Protestant" instead of "Church of England" &c., "Catholic" instead of "Roman Catholic," &c.</p> <p>If a freethinker, or professing no Denomination or Religion, state so. Write against the names of Children, however young, the Religion in which it is intended they are to be brought up. [If any person objects to state the Religious Denomination to which he adheres, the word "Object" to be entered.]</p>	<p>Insert Degree of Education, that is, "Cannot Read," "Read only," or "Read and Write," as the case may be. If a University Graduate, state Degree and University.</p> <p>[Chinese to be set down as "unable to read and write" unless they can read and write English.]</p>	<p>State whether built of Stone, Brick, or Wood, Canvas, or what other materials; also number of rooms, including kitchen.</p>
(Spaces for eighteen entries follow)			<p>Receiving Instruction.</p> <p>[Insert a cross (x) in the proper column.]</p>	
			<p>At Government School.</p>	
			<p>At Private School.</p>	
			<p>At Home.</p>	

I certify that the above Return is correct to the best of my knowledge and belief. Witness my hand

Signature of Occupier or Person in charge of a Sub-enumerator.

NUMBER OF LIVE STOCK KEPT.

[Schedule of Live Stock to follow.]

APPENDIX B—*Contd.*

GENERAL INSTRUCTIONS.

This schedule is to be filled up in accordance with the headings to the columns on the other side BY THE OCCUPIER OR PERSON IN CHARGE OF THE DWELLING with particulars respecting all the persons who slept or abode therein on the night of the _____, also of the live stock kept. If the house is occupied by different families in separate stories or apartments, each such story or apartment must be treated as a separate dwelling, and the occupier or person in charge of each must make a return upon a separate schedule. In the case of pastoral establishments the proprietor or superintendent may fill in the returns of his complete establishment, but a separate schedule must in such case be filled for each of the out-stations or huts in which a distinct family or person resides, in addition to that for the home station; and if any out-station is in a different sub-enumerator's district from that of the home station, the schedule for it is to be delivered to the sub-enumerator of the sub-district in which such dwelling is situated.

This paper will be called for by the sub-enumerator on Monday the _____ day of _____, or as soon after as practicable. Prior to that date the answers should be written in the proper columns and the document duly signed by the occupier or person in charge. It is the sub-enumerator's duty to verify the facts; and, if the form from any cause should not have been filled up, or should have been insufficiently or erroneously filled up, to record the necessary particulars or make the necessary corrections, from enquiries which he is authorised to make for that purpose.

Instructions for Filling up the Column headed "Profession or Occupation."

ARMY AND NAVY.—If on actual service, state so. If retired, state present occupation.

PERSONS IN THE SERVICE OF THE GENERAL OR LOCAL GOVERNMENT to state the position they hold, and, if engaged in any other occupation, to specify its nature.

JUSTICES OF THE PEACE, ALDERMEN, TOWN COUNCILLORS, &c., and other important public officers to state their ordinary profession or occupation.

MINISTERS OF RELIGION to state denomination. They are requested not to employ the indefinite term "*clerk*." Local or occasional preachers to return their ordinary occupations.

MEMBERS OF THE LEGAL PROFESSION to state whether in actual practice; if not practising, to state present occupation. Persons employed in solicitors' offices to distinguish whether they are articulated or other clerks.

MEMBERS OF THE MEDICAL PROFESSION to state whether they are physicians, surgeons, or general practitioners, and return themselves as *practising* or *not practising*; if not practising to state present occupation.

TEACHERS, AUTHORS, PUBLIC WRITERS, and ARTISTS to state the particular branch of science, literature, or art in which they are engaged.

Engineers to state whether civil, mechanical, or mining, &c. Surveyors to state whether land, mining, or marine, &c.

PERSONS ENGAGED IN TRADE OR COMMERCE, as merchants, manufacturers, storekeepers, retailers, brokers, agents, auctioneers, &c., to state the particular business in which they are engaged, or the principal commodity in which they deal.

CLERKS, BOOK-KEEPERS, SALESMEN, SALESWOMEN, SHOPMEN, COMMERCIAL TRAVELLERS, &c., to be described according to the business with which they are connected—"bank clerk," "railway clerk," "salesman in soft goods store," "shopman to grocer," "traveller to wine merchant," &c.

The term FARMER or GARDENER to be applied to all persons actually in occupation of land and tilling, whether proprietors or tenants. The word "landowner" is too vague. Wives, sons and daughters, brothers, or other relatives habitually helping on farms and stations, may be returned as "wife assisting," "son assisting," "daughter assisting," &c., as the case may be.

MINERS to specify the nature of the mineral on which they work, and in respect of metallic ores to add whether *lode* or *alluvial*. A miner working for another should return himself as "miner," not as a laborer.

ARTISANS and MECHANICS should always mention the particular branch of their trade; thus—"ship carpenter," "house carpenter," "shingler," "coachsmith," "locksmith," "horse-shoer."

CARTERS, CARRIERS, LABORERS, SERVANTS, &c., to be described in connection with their usual employment, "carter in town," "bullock driver on station," "laborer making roads," "omnibus driver," "cabman," "railway porter," "telegraph messenger," "domestic servant."

Persons not following any profession, trade, or calling, and not holding any public office, but possessed of independent means, may designate themselves "proprietor of land," "proprietor of houses," "capitalist," "annuitant," as the case may be. The word "householder" should not be used in place of "proprietor of houses," nor the word "gentleman" or "lady" in place of "no occupation."

WOMEN.—The occupations of women who are employed in any but domestic duties should be distinctly recorded; but they should not be entered as engaged in the occupations of their husbands or fathers, &c., unless they habitually assist them. When only in the capacity of wife, mother, daughter, sister, &c., write "*domestic duties*."

PERSONS IN HOSPITALS, ASYLUMS, GAOLS, &c.—The position of these in the institution being given in the second column in accordance with the instructions at its head, their calling (if any) before they entered the institution is to be inserted in the occupation column.

* * * Every answer should be written in full. The use of dots (,) or ditto (do) leads to numerous mistakes, and is not to be accepted by the sub-enumerators.

Example of the mode of Filling up the Return.

[Model schedule to be inserted here.]

APPENDIX C.

RESOLUTIONS OF THE CONFERENCE.

Subjects of Enquiry.

1. That the subjects respecting which it is desired that enquiry be made at the census be named in "The Census Act," but that the schedule containing those enquiries be not attached thereto.

2. That the subjects of enquiry be as follow:—name, sex, birthplace, age, religion, occupation, conjugal condition, education, sickness and infirmity, materials of houses, number of rooms, number of each description of live stock.

3. That the return of religion be not compulsory, but that it be optional to insert the word "object" instead respecting any one having a conscientious objection to state his religious belief.

4. That the return of occupations include an enquiry as to the number of unemployed of each trade or calling.

5. That with reference to education an enquiry be made as to those able to read and write, able to read only and not write, and unable to read; also as to those who may be graduates of any university, together with the designations of their respective degrees, and of the universities at which they were severally conferred.

6. That with reference to sickness and infirmity an enquiry be made as to the numbers laid up or unable to pursue their usual occupation on account of illness or the effects of an accident, or who may be deaf and dumb, blind, insane, idiotic, epileptic, paralytic, leprous, or who may have lost a limb or the sight of an eye.

7. That in the return of houses, those inhabited, uninhabited, and in course of erection be separately distinguished.

8. That, in accordance with the foregoing resolutions, the householder's schedule (Appendix B) hereto attached be the basis of the enquiries to be made under "The Census Act."

Compilation.

9. That the Chinese and the aborigines, as far as possible (including half-castes), be tabulated apart from the general population under every head of enquiry, so that it may be possible to combine their numbers therewith or separate them therefrom, as may be desired.

10. That in compiling the census returns, the groupings be as definite as possible; and although it may be sometimes necessary to have such headings as "other birthplaces," "other religions," "miscellaneous occupations," &c., the names of the various birthplaces, religions, occupations, &c., placed under such heads be in every case stated, in foot-notes or otherwise.

11. That, in working out proportions under any head of enquiry to show the value of the numbers in each line to the total, the items in the line for the unspecified be altogether excluded from the computation.

12. That, in the general tables of birthplaces provision be made for showing the number of natives of each of the principal countries of the world, and of each Australasian colony named in the schedules; also, in foot-notes or separate table, the number of natives of each of the smaller countries of the world there named. That persons whose birthplace is stated to be "Australia," if under 12 years of age, be tabulated as born in the colony to which the census relates, but if 12 years of age or over, in the column for "Australia undefined."

13. That provision be made in the general tables for showing the numbers and sexes of the adherents to all the principal religious sects named in the schedules; and in foot-notes or separate tables the numbers and sexes of all the adherents to all minor sects there named. That children respecting whom the return of religion is unspecified be tabulated as of the religion of their parents, if the father and mother are stated to be of the same religion, or of the religion of one parent if specified; but that if the parents are of different denominations, no assumption be made as to the religion of the children, who are to be classed as unspecified.

14. That the ages of the people of either sex be tabulated in single ages up to 21, then in quinquennial periods of age up to 85, and after that in single ages; also, that a table be prepared showing the numbers of either sex in the whole population at each year of age.

15. That in tabulating the occupations of the people, the numbers of either sex under 5 years of age between 3 and 15; 15 and 20; 20 and 25; 25 and 45; 45 and 65; and over 65 be distinguished; that the occupations be tabulated according to the amended system of classification indicated in Appendix D; also that additional tables, so far as the classes and orders are concerned, be prepared according to the systems followed in the majority of the Australasian colonies at the census of 1881; also that subsidiary tables be compiled showing (I) the ordinary occupations of the unemployed of either sex; (II) employers of labour and persons in business for themselves, also wage-earners; (III) the ordinary occupations of inmates of either sex of (*a*) hospitals, (*b*) benevolent asylums, (*c*) hospitals for the insane, (*d*) other charitable institutions, (*e*) gaols and penal establishments; (IV) the occupations of university graduates. That in the case of a person returned as following more than one occupation, he be tabulated, as a rule, under the head of the first mentioned, the exception being a Government officer following some other calling, as, for instance, "deputy registrar and storekeeper," in which case he is to be classified as the latter; also, a person residing where one of his occupations is carried on which would warrant its being considered as the more important, as, for instance, "farmer and publican," living at the public house, is to be classed as a publican, although that calling may be stated second.

16. That in the table of education the people be grouped in single ages from 3 to 21 years of age, and after that in quinquennial periods to 85 years of age; those of either sex able to read and write, able to read only, and unable to read, being distinguished.

That no child under 3 years of age be set down as able to read, and no child under 5 years of age as able to write; also, that Chinese unable to read English be set down as unable to read. That a table be also prepared showing the degree of primary instruction possessed by children between 5 and 15 years of age attached to each religious denomination.

17. That in the tables of conjugal condition the people be grouped in single ages from 14 to 21 years of age, and after that in quinquennial periods to 85 years of age, those of either sex never married, married, and widowed or divorced being distinguished; that Chinese be set down as never married unless they have or have had wives in Australasia. That tables be prepared of the divorced persons of either sex, showing their birthplaces, ages, religions, and occupations; also, a table showing the number of wives whose husbands were absent, and of husbands whose wives were absent, on the census night.

18. That tables be prepared showing the numbers of either sex suffering from each description of sickness or infirmity, grouped in single years of age up to 21, and afterwards in quinquennial periods up to 85 years of age; that tables be also prepared showing the occupations of those suffering from each description of infirmity.

APPENDIX D.

OCCUPATIONS.

Systematic Classification of Classes and Orders, as agreed upon by the Australasian Census Conference, held at Hobart, March, 1890.

CLASSES.

I. PROFESSIONAL.—(*Andrici*, Farr.) Embracing all persons mainly engaged in the government and defence of the country, and in satisfying the higher intellectual and moral requirements and the special social wants not included in the material services rendered by other classes hereafter specified or classed.

II. DOMESTIC.—Embracing all persons engaged in rendering personal services, and in the supply of board and lodging for which remuneration is usually paid.

III. COMMERCIAL.—(*Trade and Transport*, United States Census, 1881: *Agorici*, Farr.) Embracing all persons directly connected with the *hire, sale, transfer, distribution, storage, and security* of property and materials, but who as a rule do not effect any material change in the nature of the objects which pass through their hands.

IV. INDUSTRIAL.—(Part of the *Technici* of Farr.) Embracing all persons not otherwise classed, who are principally engaged in various works of utility or in specialities connected with the construction, modification, or alteration of materials so as to render them more available for the various uses of man, but excluding as far as possible all who are engaged mainly or solely in the service of interchange.

V. AGRICULTURAL, PASTORAL, MINERAL, AND OTHER PRIMARY PRODUCERS.—(*Georgici* and part of the *Technici* of Farr.) Embracing all persons mainly engaged in the cultivation or acqui-

sition of food products, and in obtaining other raw materials from natural sources.

VI. INDEFINITE.—Embracing all persons who derive their income from services rendered, but the direction of which services cannot be exactly determined.

VII. DEPENDANTS.—Embracing all persons dependent upon relatives or natural guardians, including wives, children, and relatives not otherwise engaged in pursuits for which remuneration is usually paid, and all persons supported by private or public charity, or dependants upon the public revenue.

CLASSES, ORDERS, AND SUB-ORDERS.

CLASS I. PROFESSIONAL. (*Orders 1 and 2.*)

Order 1. Persons engaged in Government, Defence, Law, and Protection, not otherwise classed.

Sub-order 1. Ministering to general government.

„ 2. Ditto, local government.

„ 3. Ditto, defence.

„ 4. Ditto, law and order.

Order 2. Persons ministering to Religion, Charity, Education, Art and Science, including their immediate Subordinates.

Sub-order 1. Ministering to religion.

„ 2. Ditto, benevolence and charity, exclusive of hospitals.

„ 3. Ditto, health.

„ 4. Ditto, literature.

„ 5. Ditto, science.

„ 6. Ditto, civil and mechanical engineering, architecture, and surveying.

„ 7. Ditto, education.

„ 8. Ditto, fine arts.

„ 9. Ditto, music.

„ 10. Ditto, amusements.

CLASS II. DOMESTIC. (*Order 3.*)

Order 3. Persons engaged in entertaining and performing personal service for man for which remuneration is usually paid.

Sub-order 1. Engaged in board and lodging.

„ 2. Ditto, attendance.

CLASS III. COMMERCIAL. (*Orders 4 to 11.*)

SUB-CLASS A. PROPERTY AND FINANCE.

Order 4. Persons or their Agents or Assistants who perform various offices in connection with the exchange, valuation, insurance, lease, loan, or keep of money, houses, lands, or property rights.

Sub-order 1. Engaged in connection with banking and finance.

„ 2. Ditto, ditto, insurance and valuation.

„ 3. Ditto, ditto, land and household property.

„ 4. Ditto, ditto, other exchanges of property rights not otherwise classed.

SUB-CLASS B. TRADE.

Order 5. Persons or their Agents or Assistants engaged in dealing in Art and Mechanic Productions, in which matters of various kinds are employed in combination.

Sub-order 1. Agents, dealers, and other persons directly connected with the sale, hire, or exchange of books or publications.

- „ 2. Ditto, ditto, musical instruments.
- „ 3. Ditto, ditto, prints, pictures, and art materials.
- „ 4. Ditto, ditto, carving, figures, and minor art products.
- „ 5. Ditto, ditto, equipment for sports and games.
- „ 6. Ditto, ditto, designs, medals, type, and dies.
- „ 7. Ditto, ditto, watches, clocks, and scientific instruments.
- „ 8. Ditto, ditto, surgical instruments and appliances.
- „ 9. Ditto, ditto, arms and explosives.
- „ 10. Ditto, ditto, machines, tools, and implements.
- „ 11. Ditto, ditto, carriages and vehicles.
- „ 12. Ditto, ditto, harness, saddlery, and leatherware.
- „ 13. Ditto, ditto, ships, boats, and marine stores.
- „ 14. Ditto, ditto, building materials and house fittings.
- „ 15. Ditto, ditto, furniture.
- „ 16. Ditto, ditto, chemicals and by-products.

Order 6. Persons or their Agents or Assistants engaged in dealing in Textile Fabrics and Dress, and in Fibrous Materials.

Sub-order 1. Agents, dealers, and other persons directly connected with the sale, hire, or exchange of textile fabrics.

- „ 2. Ditto, ditto, dress.
- „ 3. Ditto, ditto, fibrous materials.

Order 7. Persons or their Agents or Assistants engaged in dealing in Food, Drink, Narcotics, and Stimulants.²

Sub-order 1. Agents, dealers, and other persons directly connected with the sale or exchange of animal food.²

- „ 2. Ditto, ditto, vegetable food.²
- „ 3. Ditto, ditto, drinks, narcotics, and stimulants.²

Order 8. Persons or their Agents or Assistants engaged in dealing in Animals and Animal and Vegetable Substances, excluding Dealers in Food and those directly engaged in Agricultural and Pastoral pursuits and others classed among Primary Producers.

Sub-order 1. Agents, dealers, and other persons directly connected with the sale, hire, or exchange of animals or animal matters, exclusive of those directly engaged in pastoral pursuits and those engaged in fisheries or in the capture, preservation, or destruction of wild animals.

² Excepting in each case primary producers grouped under Class V.

Sub-order 2. Agents, dealers, and other persons directly connected with the sale, hire, or exchange of vegetable matters, excluding those directly engaged in agricultural pursuits or those directly connected with forestry or natural vegetable products.

*Order 9. Persons or their Agents or Assistants engaged in dealing in Minerals, exclusive of those directly connected with Mines, Quarries, and Reservoirs.*³

Sub-order 1. Agents, dealers, and other persons directly connected with the sale, hire, or exchange of coal and other mineral substances devoted mainly to purposes of fuel and light.³

„ 2. Ditto, ditto, stone, clay, earthenware, glass, ice, and minerals not otherwise classed.³

„ 3. Ditto, ditto, in gold, silver, and precious stones.³

„ 4. Ditto, ditto, in metals other than gold and silver.³

Order 10. Persons or their Agents or Assistants engaged as General Dealers or in various Mercantile Pursuits not otherwise classed.

Sub-order 1. General dealers, with their agents and assistants.

„ 2. Other mercantile persons not related to any previous sub-order, or undefined.

SUB-CLASS C. TRANSPORT, COMMUNICATION, AND STORAGE.

Order 11. Persons or their Agents or Assistants engaged in the Conveyance of Men, Animals, Goods, or in Communication.

Sub-order 1. Carriers and their agents and assistants on railways (not railway construction).

„ 2. Ditto, ditto, roads.

„ 3. Ditto, ditto, seas, rivers, and canals.

„ 4. Persons connected with postal service.

„ 5. Ditto, ditto, telegraph and telephone service.

„ 6. Ditto, ditto, other modes of transport and communication.

„ 7. Ditto, ditto, storage.

CLASS IV. INDUSTRIAL. (Orders 12 to 18.)

SUB-CLASS A. TECHNICAL.

Order 12. Persons engaged in connection with the Manufacture or in other Processes relating to Art and Mechanic Productions in which Materials of various kinds are employed in combination.

Sub-order 1. Engaged in the production or manufacture of books or publications.

„ 2. Ditto, ditto, musical instruments.

„ 3. Ditto, ditto, prints, pictures, and art materials.

„ 4. Ditto, ditto, carving, figures, and minor art products.

³ Excepting in each case primary producers grouped under Class V.

Sub-order 5. Engaged in the production or manufacture of equipment for sports and games.

- „ 6. Ditto, ditto, designs, medals, type, and dies.
- „ 7. Ditto, ditto, watches, clocks, and scientific instruments.
- „ 8. Ditto, ditto, surgical instruments and appliances.
- „ 9. Ditto, ditto, arms and explosives.
- „ 10. Ditto, ditto, machines, tools, and implements.
- „ 11. Ditto, ditto, carriages and vehicles.
- „ 12. Ditto, ditto, harness, saddlery, and leatherware.
- „ 13. Ditto, ditto, ships, boats, and their equipment.
- „ 14. Ditto, ditto, houses, buildings, and house fittings.
- „ 15. Ditto, ditto, furniture.
- „ 16. Ditto, ditto, chemicals and by-products.

Order 13. Persons engaged in connection with the Manufacture, or in Repairs, Cleansing, or other Processes relating to Textile Fabrics, Dress and Fibrous Materials.

- Sub-order 1. In textile fabrics.
- „ 2. In dress.
- „ 3. In fibrous materials.

Order 14. Persons engaged in connection with the Manufacture or in other Processes relating to Food, Drink, Narcotics, and Stimulants.⁴

- Sub-order 1. In manufacture of animal food.⁴
- „ 2. Ditto, vegetable food.⁴
- „ 3. Ditto, drinks, narcotics, and stimulants.⁴

Order 15. Persons not otherwise classed engaged in connection with the Equipment or Treatment of Animals or in Manufactures and other Processes connected with Animal and Vegetable Substances.⁵

- Sub-order 1. In treatment of animals and their equipment, if not otherwise classed.⁵
- „ 2. In manufacture of animal matters.⁵
- „ 3. Ditto, vegetable matters⁵ (except fuel).

Order 16. Persons engaged in the Alteration, Modification, or Manufacture, or in other Processes relating to Mineral Matters.⁵

- Sub-order 1. In the conversion of coal and other mineral substances to purposes of heat, light or forms of energy not otherwise classed.⁵
- „ 2. In manufactures and processes specially related to stone, clay, earthenware, glass, ice, and minerals not otherwise classed.⁵
- „ 3. Ditto, ditto, gold, silver, and precious stones.⁵
- „ 4. Ditto, ditto, metals other than gold and silver.⁵

⁴ Excepting in each case primary producers grouped under Class V.

⁵ Excepting in all cases primary producers grouped under Class V, and all persons engaged in transport grouped under Order 11.

*Order 17. Persons engaged in Manufactures, Constructions, or Processes requiring technical skill not otherwise classed.*⁶

SUB-CLASS B. NON-TECHNICAL OR UNSKILLED LABOUR.

*Order 18. Persons requiring no technical or special skill engaged in the construction or repair of Earthworks, or in works connected with the collection or disposal of all forms of Dead Matter, Silt, or Refuse.*⁶

- Sub-order 1. Workers (non-technical) engaged in the construction of railways, roads, canals, harbours and approaches, and such like.⁶
- „ 2. Ditto, ditto, connected with road repairs, cemeteries, and the collection and disposal of all forms of refuse.⁶
- „ 3. Laborers, undefined, not otherwise classed.

CLASS V. AGRICULTURAL, PASTORAL, MINERAL, AND OTHER PRIMARY PRODUCERS. (*Order 19.*)

Order 19. Persons directly engaged in matters related to the Cultivation of Land, or to rearing or breeding of Animals, or in obtaining Raw Products from natural sources.

- Sub-order 1. Engaged in agricultural pursuits.
- „ 2. Ditto, pastoral pursuits.
- „ 3. Ditto, in connection with fisheries, the capture, preservation, or destruction of wild animals, or the acquisition of products yielded by wild animals.
- „ 4. Ditto, ditto, forestry, or in the acquisition of raw products yielded by natural vegetation.
- „ 5. Ditto, ditto, conservancy of water in all its forms, and in water supply.
- „ 6. Ditto, ditto, in mines, quarries, or the acquisition of natural mineral products.

CLASS VI. INDEFINITE. (*Order 20.*)

Order 20. Persons whose Occupations are undefined or unknown, embracing those who derive Incomes from sources which cannot be directly related to any other Class.

- Sub-order 1. Pensioners, annuitants, &c., undefined.
- „ 2. Others.

⁶ Excepting in all cases primary producers grouped under Class V, and all persons engaged in transport grouped under Order 11.

Note.—1. Persons who are both producers and dealers to be classed as producers only under Class V; persons who are both manufacturers and dealers to be classed as manufacturers only under Class IV.

2. Wives not to be tabulated as of the occupation of their husbands unless specially so stated on the schedule. Where no occupation is stated, such women to be classed under the head of dependants engaged in *domestic duties*, Class VII.

CLASS VII. DEPENDANTS. (*Orders 21 and 22.*)*Order 21. Persons dependent upon natural Guardians.*

- Sub-order 1. Engaged in domestic duties for which remuneration is not paid.
- „ 2. Scholars and students.
- „ 3. Children.
- „ 4. Other relatives.

Order 22. Persons dependent upon the State or upon Public or Private support.

- Sub-order 1. Inmates of charitable institutions, paupers, beggars, and such like.
- „ 2. Criminals.

 III.—*Anthropometric Identification of Criminals.*

THE following is taken from the *Times* of the 23rd April, 1890:—

“Last evening M. Jacques Bertillon (head of the Municipal Bureau of Statistics in Paris) delivered a lecture before the Anthropological Institute of Great Britain and Ireland on the method now practised in France of identifying criminals by comparing their measures with those of convicted persons in the prison registers. Mr. Francis Galton, F.R.S., presided, and among those present were Dr. Mouat, Sir Rawson Rawson, and Dr. Hyde Clarke.

“M. Bertillon, who spoke in French, said that the system which he had come there to explain was an essentially practical one. It had for its object the recognition of a person ten, fifteen, twenty, or even one hundred years after he had been measured, for by that method it was possible to recognise a person after death, if access could be had to his skeleton. The greatest puzzle in identification used to be the assumption of false names, which rendered the search through a large number of photographs absolutely useless. Thus, in Paris, when 100,000 photographs had been collected by the police, it was impossible to turn them to profitable account. Photography was now therefore relegated to a secondary position, and only used as an aid to identification established by other means. The basis of the anthropometric system was to obtain measurements of those bony parts of the body which underwent little or no change after maturity, and could be measured with extreme accuracy to within so small a figure as to be practically exact. These parts were the head, the foot, the middle finger, and the extended forearm from the elbow. To clearly illustrate the system let them suppose 90,000 photographs of men to have been collected. These would be divided into three groups of 30,000, according to the height of the men. There would be short men, men of medium height, and tall men.

That these three classes might be approximately equal, it was evident that the limits of the class of men of medium height must be restricted more than those of the other two classes. Each of these primary divisions should again be divided on the same principle, without taking any further notice of the height, into three classes, according to the length of the head of each individual. The three classes of short, medium, and long heads would each again be subdivided into three, according to the width of the heads, and would contain narrow, medium, and wide heads. Experience had proved that with most people the breadth of the head varied independently of the length; that was, that given that an individual had a certain length of head, it by no means followed that the breadth of his head could be determined *à priori*. The length of the middle finger gave a fourth and still more precise indication by which to divide again each one of the packets of photographs; and these might be divided again according to the length of the foot, the length of the arms outstretched at right angles to the body, and also according to the colour of the eyes. Thus by these anthropometrical co-efficients they would be able to divide their collection of 90,000 photographs into very small groups of about 15 each, which they could easily and rapidly examine. M. Bertillon then proceeded to give a practical demonstration of the way in which the measurements were taken. The instruments employed by him were simple but very accurate in their construction, and the measurements were taken with great exactitude. The lecturer explained that the instrument for measuring the head was so accurate that the measurement could be taken to within one millimètre. It had been found by experience that the length of the heads of different individuals differed more than 3 centimètres (say 30 millimètres). It was admitted that we had no power to lengthen our heads, and it was well known that the skulls developed very little after an individual had arrived at maturity. With our stature it was not the same, for as years passed by we became bent, and our height became less; besides it was possible to cheat to the extent of 2 centimètres without its being discovered by the operator. The differences in height moreover between different individuals did not commonly vary more than 30 centimètres. The result was therefore if they admitted that they could only measure the height to within 3 centimètres, that they could only establish ten different classes of heights, progressing by 3 centimètres; whereas with the head, which they could measure to a millimètre, and which varied 30 millimètres in different individuals, they were enabled to establish thirty classes. The size of the head therefore differing three times more than the height, it followed that it was three times more advantageous for anthropometrical purposes than the height. The same calculations might be made for all the other measurements. Height varied considerably in actual figures, but it was difficult to measure accurately. The diameters of the head, and the length of the middle finger, of the foot, &c., varying only a few centimètres between different individuals, could therefore be accurately measured. As an instance of the exactitude with which these measurements were taken, the lecturer stated

that three American gentlemen had visited his brother in France and requested him to measure them in order to test the accuracy of measurements made in Chicago, and it was found that the measurements corresponded to the most minute detail. The length of the middle finger was the best of the indications, for it could be measured to a millimètre, provided that care was taken that the finger was bent at an exact right angle with the back of the hand. There could be no cheating with this, and it underwent no alteration from adult to old age. It occasionally happened that the person to be measured was refractory, and declined to allow the necessary manipulation of his person. In these cases by means of his shoes, hat, gloves, &c., a sufficiently near measurement could be arrived at. The experience in Paris however was that the criminal made no objection to the formality; sometimes because he regarded it as a mere formality, and sometimes perhaps because he apprehended that any resistance on his part might make the authorities suspicious of his past history, and thus induce them to make a more careful search. Besides the above measurements and observations, a photograph of the criminal was taken. This proceeding was now however considered as of secondary importance, and was used only as a further test to secure absolute accuracy. All evidence of scars, moles, or characteristic indications of any kind was recorded on the backs of the photographs, with anatomical precision as to their nature, dimensions, situation, &c., and much importance had always been attached to some of these. Thus the system of identification embraced three distinct elements, each independent of the other: (1) mensuration; (2) photographs, profile or full face; (3) record of cicatrices or scars. When these were taken together they controlled the identity of an individual for many years with absolute certainty. To work rapidly required that the measurer should have the assistance of a clerk, to whom he could dictate his figures without leaving his instruments, and in this way the whole operation could be concluded in seven minutes. Considerable stress was laid by M. Bertillon on the importance of the hand and the ear as marks of recognition. The hand, because it was the organ in most constant use in almost every calling and in many trades and professions, became modified according to the particular character of the work which it had to do. The ear was the precise opposite to this. It changed very slightly, if at all, except perhaps in the case of prize fighters, who developed a peculiarity of the ear which it was easy to recognise. The ear therefore was an important organ to measure, inasmuch as the results were not likely to be nullified by a change in its conformation. The examination of criminals under this system had been extending with great rapidity in France. In 1882 there were 225 examined, and the number had increased year by year until in 1888 the number was 31,849. Of this last total 615 persons were recognised as having relapsed into crime and given false names. The number 31,849 represented nearly the whole number of persons arrested during 1888 for offences under the common law and having passed through the dépôt. A striking proof of the efficacy of the system of anthropometry was furnished by the com-

plete disappearance of dissimulation of identities in the prisons other than the dépôt, so that whilst in 1884-85 the number of recognitions made in the prison after conviction amounted to 200 or 300 a year, the number of cases of this class in the whole year 1888 was 14, of whom 10 were individuals who, never having been measured before, were of necessity not recognisable by the service. This left four omissions to be distributed among the 31,000 examined in the year. The lecturer explained that the system of measurement required no further instruction than was contained in a small manual, and that if the directions were followed it would be easy to get records made in any country which might be in the highest degree serviceable in the detection of criminals and for other useful purposes. Speaking for himself, he would like to see everybody measured. He might be regarded as having a mania on that point; but he believed that if measurements were made of every one, there would be a series of scientific *data* collected of which it was impossible at the present time to foresee the importance."

IV.—Notes on Economical and Statistical Works.

Emigration and Immigration, a Study in Social Science. By Richmond Mayo Smith. New York: Charles Scribner's Sons, 1890.

In the December number of the *Journal* for 1888 we noticed, among other writings of Professor Richmond Smith, three articles on the Control of Immigration contributed by him to the *Political Science Quarterly*. The volume now before us may be described as an expansion of these articles into the form of a book; but the author has in the process considerably enlarged his treatment of the subject. He discusses it, it is true, in the book as in the articles, chiefly from an American standpoint; but he introduces other and wider considerations, and, as he shows, it is not merely in America that the question of restricting or regulating immigration is coming to the front. There have indeed, as he argues in his concluding chapter, been as it were three distinct periods in the evolution of the principles of political science on the subject. In the middle ages freedom of migration was wholly denied; with the rise of the theoretical philosophy based on the ideas of the French revolution, and the appearance of the practical exigencies dictated by the expansion of trade and industry, freedom and equality were accorded unstinted recognition, and with the general extension of freedom came freedom of emigration from one country and of immigration into another. And now a further change seems to be taking place, and considerations of international comity and of humanity, strengthened and supported by the revival of the legal doctrine of permanent allegiance, are suggesting limits to individual liberty in the matter of immigration. In chapters x and xii he points out that the State has, more especially of recent

years, interfered in the matter both from the side of the emigrant and of the immigrant. It has taken measures for the protection of the one on his passage across the seas, and of the other on his landing in the country to which he comes. And it has in America and in France established positive restrictions on immigration. The question of Chinese immigration into America and our own Australasian colonies has forced the matter to the front; and, although, as Mr. Smith is careful to show in his eleventh chapter, the people and the Government of the United States may have acted with intolerance and unfairness, if not with harshness and violence, in the case of the Chinese, yet such restrictions as have been imposed by the American authorities on the importation of contract labour and on pauper immigration are, in his opinion, justifiable, and even necessary. They are indeed, he believes (chapter xii), practically insufficient in consequence of the difficulty of adequate inspection; and he suggests himself that any intending emigrant to America should be compelled to obtain from the American consul residing in his district a certificate that he is not likely to be a burden upon the States when he arrives. The necessity of some such provision is, he urges, the more obvious and pressing because emigration is not now left to natural influences, but is artificially fostered (chapter ix) by local authorities, by charitable societies, by friends and relations, and—and this is the most mischievous because it is also the least responsible influence—by the agents of steamship companies who solicit ignorant passengers by dint of fallacious representations. There was a time in the history of the world when, as Mr. Smith shows in his second chapter, the only form of emigration was the onward march of conquering tribes; there was a later period when colonisation was conducted for commercial objects; there was a time subsequent to this when emigration was purely voluntary, and now we have reached a period when it is artificially stimulated. In the case of the last two of these four periods a dilemma presents itself from which it seems impossible to find an escape. If the emigration is for the benefit of the country to which the emigrant comes, it can hardly be for that of the country he leaves; and if his departure from the one country is a source of advantage to it, there can scarcely be an advantage to the other country arising from his arrival there. Under the system of voluntary emigration it is the enterprising men with some little savings of their own who form the majority of the emigrant class, and their departure is not a matter to suggest congratulation. Under the system of assisted emigration, the classes of whom it is sought to effect a riddance are the paupers and the “ne’er do wells,” and their arrival, it is only natural to expect, will be discountenanced by the authorities of the country to which they are despatched. But it is the duty, Mr. Smith urges in his book as in his articles, of the higher civilisation to take care that it is not dragged down to a lower plane; and if this degradation seems likely to result from unrestricted immigration, then the best interests of humanity dictate the advantage, if not the necessity, of imposing restrictions. And so, regarding the question from the American standpoint, Mr. Smith

investigates in chapters v—viii the political, economic, and social aspects of immigration into the United States. He recognises the immense benefit derived from that immigration in the past, and the manner in which it has, together with the influence of free land and of railways, promoted the astonishing growth of the United States. He exhibits the magnitude of the immigration since 1820, and the remarkable way in which the immigrant element has until recently been assimilated by dint of the economic prosperity of the country, the free exercise of political rights, and the predominance of the English language. But of late years, owing to the influences we have previously noted, the character and to some extent the nationality, of the immigrants have changed. In these circumstances unrestricted immigration puts a very severe strain on democratic institutions. The large proportion of adults amongst the immigrants gives the foreign-born great political power; the test of character and of fitness for the exercise of that power is technically required by the law, but is in practice reduced to a form; and the corruption of municipal government, like the outbreak of anarchic socialism, may be traced to the influence of foreigners. The economic gain arising from the immigration is, to say the least, doubtful, and is probably a minus quantity if a correct balance be struck between gain and loss. Against the money the immigrants bring must be set off the remittances they send back home, and it is difficult to apply any satisfactory standard by which we can measure their value as men. But they consist largely of unskilled labourers, who are not needed in America, and tend to congest in the great cities and to lower the standard of living. If then the political danger is evident, and the economic gain doubtful, if not positively illusory, the social injury is probably considerable. It is indeed difficult to gauge with exactitude, and the American statistics of death and disease are far from satisfactory. Mr. Smith admits that many extravagant assertions are made on the subject, but he believes that on the whole it is safe to affirm that viewed from the social standpoint the immigration is injurious. The entire question is, it is true, one of great difficulty, for immigration is a complex phenomenon, and any methods of investigation can hardly furnish evidence of more than tendencies; but these tendencies are, in Mr. Smith's opinion, sufficiently palpable to warrant restrictions.

The Quarterly Journal of Economics. Vol. iv, No. 3, April, 1890. Boston: George H. Ellis, 1890.

The chief articles in the April number of the *Boston Quarterly* are by General Walker, Mr. Gonner, and Professor Taussig. Mr. Gonner writes upon Ricardo and his Critics, and has little difficulty in showing the unfairness with which the great English economist has been treated, even by writers of such eminent ability and width of knowledge as Professors Jevons, Ingram, and Held. General Walker contributes an opportune article on Protection and Protectionists. He defines protection as the "disposition to replace, in any considerable degree, aims proposed by the legislator or the governor, for those which would be spon-

taneously sought by the individual citizens acting upon their own initiative, and seeking ends which to them personally appear good." He declares that the advocates of protection are not entitled to any advantage which may arise from the "favourable significance" of the term; nor does it apply to manufactures more than to agriculture. He uses the qualifying expression "in any considerable degree," because there may be reasons, political and not industrial, for a governmental interference which does not amount to a case of protection; and he acknowledges that his definition is so wide that it may comprehend "protectionists" who are in reality more opposed to one another than they are to "non-protectionists." He therefore proceeds to distinguish them into various classes. There are, in the first place, those who employ the argument known as that of the "infant industries," and there are those who advocate protection as a permanent policy, and are now most prominent, although they were in the early days of the Union in a small minority. The "infant industries" argument is supported by the authority of Mill; but the well-known passage in his book, in General Walker's opinion, both over-states and under-states the case, and the practical objection arising from the danger of political intrigue is considerable. In the second place General Walker establishes a distinction among the advocates of protection as a permanent policy between those who would select certain industries for the application of the principle, and those who would apply it without discrimination. The advocates of the latter are indeed growing more active, but they cannot alter the fact that the United States is "so much of a world in itself," that, in spite of all that protection can "possibly accomplish," it "must remain the largest example of free trade mankind have to contemplate." A third distinction is to be found between those who favour low and those who favour high and prohibitive duties; and here again it is the latter class which is becoming more active and powerful in the States. General Walker then proceeds to consider some points in the question at issue between protectionists and non-protectionists. He thinks that the free trade writers are wrong in the two leading arguments by which they have attempted to close the discussion, that of *laissez-faire*, and that which is based on the wholly negative character of protective legislation. The new argument, too, advanced by Professor Sumner, that protection is immoral, is not valid; but, on the other hand, the favourite contention of protectionists, known as the "exhaustion of the soil" argument, is virtually abandoned. Nor is there, General Walker thinks, any serious reason why political entities should constitute industrial entities; but an argument might in his opinion be framed to show that some advantage might follow from an interruption of the tendency to the world-wide extension of the division of labour, with its possible consequence of miscalculation of demand. The so-called "pauper-labour argument," again, may have some element of truth where industrial efficiency does not increase correspondingly to an increase of wages, and the American manufacturer is therefore placed at a disadvantage compared with his foreign competitor;

but in the last resort we come back to the stubborn facts of the "known fallibility of law makers and the evil liabilities which beset legislation." Professor Taussig, in an interesting and instructive article, gives an account of the results of the silver legislation in America from 1878 onwards. In a chart prefixed to his article he shows the amount of the silver currency in circulation, whether in the form of actual dollars or of paper certificates. There is a gap between the dollars coined and this amount; and the gap varies in size according to three distinct periods of time. From 1878 to 1884 it is small, during 1885 and 1886 it increases in size, and from 1886 onwards it contracts again. Mr. Taussig notices the curious fact, which is somewhat analogous to Jevons' autumnal drain in the English money market, of an increase in the volume of the currency during the closing months of each year, occasioned by the flow of money to the south and west to effect the exchanges which multiply at the time of harvest. He points out that, in spite of the strenuous and persistent efforts of the Treasury to get the silver currency into circulation, it is used chiefly for small change, and the banks have boycotted it in the larger transactions. He then describes in detail the history of the three periods he has distinguished. In the first the Treasury was very active in stimulating the circulation, and the trade and industry of the country were prosperous and needed abundant tools of exchange; in the second, trade contracted, and the situation of the Treasury became critical, and it designedly restricted the issue of silver, and suspended the redemption of the debt. In the third and last period the circulation of silver was encouraged by the issue of certificates of very small denominations, and by the reduction in the bank-note circulation. The general conclusion to be drawn is that the silver currency has as yet produced no real inflation, because it has not affected directly the most important part of the machinery of exchange, which consists of bank deposits and bank clearings, but that a very great increase in the regular issue of silver might prove unmanageable, and would certainly alter the situation materially. Besides the three articles we have noticed, the April number contains an account of the German Bill against Socialism, a review of Macvane's Political Economy by Dr. Böhm Bawerk, and a notice of Professor Cohn's Finanzwissenschaft.

The Industrial Transition in Japan. By Yeijiro Ono. American Economic Association, 1890.

In this interesting monograph Dr. Ono endeavours to "trace the industrial transition now in progress in Japan," to "suggest some measures" by which it may be "facilitated," and to "speculate upon the consequences which are likely to follow in a society so long accustomed to primitive methods of industry." He shows that, although the rigid feudalism which previously prevailed, with its oppressive taxation and its local independence, has given way to union under a strong central government, yet the political changes have outstripped the industrial, and the opening of means of communication has, up till now, been followed by little, if any,

mobility on the part of the labouring classes, while the land-tax is still the basis of revenue, and agriculture and manufacture are in the main prosecuted according to the old primitive methods. His treatment is divided into the three heads we have mentioned. In the first he considers the present industrial status of Japan. He shows how population has been distributed for the most part along the coasts, on the high roads to the capital, and around the castles of the feudal lords, who maintained their independence so far that the revenue was raised by different methods in different districts, and as many as twenty-three kinds of paper notes and forty-nine kinds of coins were in circulation at the time of the dissolution of feudalism. But even now wages vary greatly within very small distances, and the movement of the population is from the cities into the country. The productive classes constitute, it is true, over 70 per cent. of the whole adult population, but they are chiefly farmers. A small portion only of the land is brought under cultivation, and the system is an "extreme" type of small farming. The average holding is about 5 acres, and is often made up of scattered pieces. The farmers are patient and work hard, but they possess scarcely any scientific knowledge. Nor has Japan advanced beyond primitive methods in manufacturing industry. She has rich deposits of iron, copper, and coal; she has, as we might expect from the character of the feudal system, considerable skill in the production of porcelain and other instruments of artistic luxury, and she presents, in the single business of brewing, a complete modern organisation. But most of her manufactures belong to the class of domestic industries, and her trade-guilds recall memories of mediæval Europe. Her system of transportation is undoubtedly improving, but the improvement is of recent date. And so, passing in the second section of his paper to the consideration of the steps necessary to facilitate the industrial transition, Dr. Ono argues in favour of the establishment of manufacturing industry, and the reform of agriculture. In the interests of the latter the means of transportation must be improved, the high rate of the land-tax reduced, and other bases of national revenue established; and the consolidation of holdings must be effected on an adequate, but not an excessive, scale, and scientific knowledge must be widely diffused. The question of the establishment of manufactures raises the controversy between free trade and protection; and Dr. Ono decides against the latter, so far as Japan is concerned, on the ground that it does not present the three conditions which are needed to render protection effectual or advantageous. It has not, like the United States, a large population and an extensive territory. It does not produce at home all the varieties of raw material necessary to its industries, nor are the intelligence nor the effective demand of its people developed equally with those of foreign nations. But, on the other hand, Dr. Ono strenuously urges the repeal of the existing commercial treaties with the western powers, and the restoration to the Japanese Government of free control over her tariff laws. Considerations of revenue, he thinks, suggest the imposition of a "vastly higher" rate of import duties, which would not contract the volume of commerce, but

would relieve the taxation on land; and the same considerations dictate the maintenance for some time to come of the export duties. In his third and concluding section Dr. Ono investigates the probable social consequences of the industrial transition. The transition is similar in general character to that accomplished in England at the time of the so-called "Industrial Revolution," but the circumstances of Japan are widely different. The labour first replaced by machinery will, he thinks, be common unskilled labour, and so the change will press most heavily on those least able to bear it. This is a serious danger, and the question whether or not it will be overcome will depend "almost wholly upon the energy of the people, and upon the sagacity of their rulers."

The Principles of Rational Taxation. By Simon N. Patten. Philadelphia: T. and J. W. Johnson and Co., 1890.

In this pamphlet, which is one of a series on questions of political economy and public law, now being issued by the University of Pennsylvania, Dr. Patten endeavours to "take up the whole subject of taxation in a systematic way." He argues that "every theory of taxation must be based upon some theory of the distribution of wealth." He maintains that the modern methods of trade, and especially of retail trade, result in a considerable amount of "waste." The sellers endeavour to attract the buyers by systematic advertising, and the tendency to form trusts and combinations really produces some saving of the waste of competition. In fact the effect of the modern system of competition on prices is in no way different from that which popular opinion attributes to monopolies or combinations. The old formula which represented competition as reducing prices is out of date, for "costly aggressiveness" brings "ten customers," where "passive cheapness" secures one; and prices, under competition as under combination, are forced to the upper limit beyond which the buyer will not go. The old economic theory of value looked to the cost of production, the newer theories have regard to the final utility. And so, in the case of retail prices, we find that they tend to diverge more and more from the cost of production, and that they are in fact determined by the final utility. There is, with the modern improvements in the shape of the division of labour and the introduction of machinery, a surplus revenue remaining after the shares of interest and of wages have been deducted from the whole produce, and the existence of this surplus allows of the rise of prices above the cost of production. A true theory of taxation, therefore, would show that the burden of it falls upon those who profit by the increase of productive power; for this is where the line of least resistance is found. A monopoly cannot shift the burden of a tax on to the public; for it is already charging the highest price for its goods that the public will pay; and a tax accordingly will only result in the diminution of waste, and, as in the case of a tax on rent, in an appropriation for the public advantage of part of the surplus revenue. The whole community may in fact be divided into two classes—those pro-

ted from competition by some natural advantage, and those who compete on an equal footing. The shares of the latter class in the distribution of wealth tend towards a minimum fixed by the standard of life, and in this standard they find as it were a "safety valve" and a limit to the crushing pressure of competition. The other class enjoys a surplus revenue, for the prices of the goods they produce tend to rise towards the upper limit, and allow them to absorb the gain arising from increased productive power. A tax, therefore, would raise the prices of goods produced by the unprotected class, but cannot raise the prices of goods produced by the other; and so the burden of taxation would fall on the possessors of surplus revenue. Applying the theory accordingly to practice, taxation may, Professor Patten argues, "be so placed as to give a greater stability of prices for articles which have lost the natural condition which make prices stable"—those articles, that is, where the price fixed by the conditions of production is separated by an interval from that fixed by the circumstances of consumption. Such a tax would "hold prices firmly at the upper margin," and would be no burden on consumer or producer, but would merely absorb "a quantity of wealth which would go to speculators and to combinations, or be wasted by useless competition." And again a "high licence" imposed upon retail stores, "would close a large part of the useless stores, and force the remaining dealers into more economical methods of business, and largely reduce their rents and number of salesmen." It would not be a burden on producer or consumer, but a means of securing for the public benefit part of the wealth now wasted.

The General Property Tax. By Edwin A. Seligman. New York: Ginn and Co., 1890.

In this pamphlet Professor Seligman reprints an article which he contributed to the *Political Science Quarterly*. In the first section he investigates the practical defects of the general property tax. The tax is, he states, commonly considered to be that one of the features of the United States system of taxation which is "more thoroughly American" than any other; and yet no "institution has evoked more angry protest, more earnest dissatisfaction." It has serious practical defects. There is a lack of uniformity and an inequality of assessment attaching to it, for it is an apportioned and not a percentage tax, and varies according to local usage, or the caprice of the assessors. The second defect to which it is liable is a lack of universality, and a failure to reach personal property; and yet, though this personal property escapes, where it is "intangible," the scrutiny of the most vigilant assessor, and where it is "tangible," is, in its chief form of stock-in-trade, specially exempted, it constitutes the greater part of the national wealth. In the third place, as regards the concealment or the false return of personal property, the tax puts a premium on dishonesty, and affords incentives to perjury. In the fourth place, it presses harder on the poor than on the rich, and its weight in reality falls on the farmers; and in the fifth and last place, it is liable, where debts are taxed, to the charge of double taxation.

It is, in short, a "dismal failure," and this result is in strict accord with the evidence of past history. In his second section Dr. Seligman reviews the development of taxation from the voluntary offerings of primitive society, to their change into compulsory contributions of a personal nature, and from those again to indirect and then to direct taxation on property. But the early forms of this direct taxation were in their essence taxation on ability, for agriculture was the one occupation, and land the predominant form of wealth. As time advanced personal property grew in amount, and an attempt was made to reach it by a property tax; but the attempt was to a great extent futile, and the tax reverted to its original form of a real and not a personal property tax. In the third section Dr. Seligman shows that the facts of history in ancient Athens, in republican and imperial Rome, in mediæval and modern Europe, prove that this is the original form of a property tax, and also the form to which, in its development, it inevitably tends to revert. Nor is the tax theoretically just, for the true standard of taxation is ability, and the amount of property a man possesses is an inadequate measure of this. It is indeed adequate in primitive society, where every freeman is a landed proprietor, and all are supported by the produce of the land. But it is not so in more advanced and civilised times, when men support themselves in many cases not from their property but from their earnings. In fact a general property tax is "no longer upheld by a single scientist of note as the sole and chief direct contribution to the national revenue."

Der Staat als Schuldner und als Gläubiger. Von George von Mayr. München: J. Schweitzer, 1890.

This little pamphlet of twenty pages contains a report of an address delivered at Munich in March last, by Dr. George von Mayr, on the position of the State as debtor and as creditor. The author points out that the nature and consequences of this position constitute one of the most important and interesting topics of discussion of the day. The matter too is, as he shows, one of growing rather than diminishing importance; for the calls upon the State are increasing in number, and its monetary obligations are increasing in amount. The present magnitude and the prospective enlargement of national indebtedness, are among the most prominent characteristics of modern Europe, and suggest many considerations of an economic, a political, and a legal nature. It is difficult within the narrow limits of a brief address to deal with all the points which may be raised in connection with the question, whether from the point of view of the student of jurisprudence, or of economics, or politics; but Dr. Mayr contrives to cover a good deal of ground in the course of his observations. He notices the many varieties of claims enjoyed and enforced by the State as creditor, and the many kinds of obligations to which it is liable as debtor. He devotes some considerable attention to questions connected with conversion of debt; and although his treatment has more especial reference to the circumstances of his own country, yet the problems he discusses are of European and indeed of world-

wide interest, and he keeps firmly in view throughout the general principles and facts of the subject.

System der Nationalökonomie. Zweiter Band: Finanzwissenschaft. Von Gustav Cohn. Stuttgart: Ferdinand Enke, 1889.

The second part of Professor Cohn's *System der Nationalökonomie* is an opportune and important addition to our economic literature. It is opportune, for until recently the subject of public finance has perhaps received less systematic treatment from the theoretical side than that accorded to the other departments of economic study and research; and it is important, for the reputation of the Göttingen professor is so high that anything which proceeds from his pen is sure to meet with respectful attention. Those who are familiar with the first part of the work of which the volume before us forms the second will find that in both the same admirable qualities are shown. Professor Cohn displays an intimate and exact acquaintance with even the minute particular details of the systems of taxation prevailing in other countries besides his own; and the volume contains a great mass of historical and statistical fact. But this abundance of material is not allowed, as we are afraid is the case with some German treatises, to encumber or obscure the theoretical discussion. Indeed the theoretical aspect of the book is throughout brought into prominence; and the author, despite of the sound discrimination of his judgment on questions of financial practice, is not engaged so much in the suggestion of ways and means for the guidance of politicians and administrators, as in the presentation, for the benefit of the economic student, of the theory, illustrated and confirmed by the facts, of public finance. He makes full and constant reference to the works of other writers on the subject; and he seems to avoid, rather than seek, absolute and definitive conclusions. If we might sum up in a sentence the chief characteristics of the book, we should say that it illustrated the typical virtues, without the common failings, of German economists.

The volume is divided into an introduction, and four sections or books. The introduction consists of two chapters, in the first of which Professor Cohn considers the position of public finance in the system of national economy, and in the second its historical development. To each of these chapters, as to those in the subsequent parts of the work, he prefixes a list of the chief passages in other economic works referring to the subject discussed in the chapter; and, among the writers who are noticed as representative of what is distinguished as the more modern theory of finance, a brief account and estimate are given of the works of Stein, Wagner, Roscher, Schäffle, Leroy-Beaulieu, Ferraris, and of the material in that part of Schönberg's *Handbuch* which is devoted to financial questions. The introduction is followed by a book on the Nature of Public Economy, which is divided into seven chapters. In these chapters the nature and functions of the State, the historical development of those functions, the less important and subordinate centres of financial administration and regulation, the needs of public finance, and the manner of meeting those needs, are succes-

sively discussed. In the second book we are introduced to the author's theory of taxation; and here Professor Cohn shows, perhaps in an especial degree, the penetrating discrimination, the sobriety and the comprehensiveness of his judgment. In the first chapter the justice of taxation is considered; in the second the object of taxation; in the third the history of the different forms of taxation; in the fourth the classification, and in the fifth and concluding chapter the administration of taxes. The second of these chapters, in which a distinction is drawn between the object on which a tax is levied, and the source from which in reality it comes, and an inquiry is made into the amount of truth or of error contained in what is known as the diffusion or repercussion theory, might be cited as an apt example of Professor Cohn's acute penetration. The third chapter, in which, after calling attention to the increasing tendency to simplicity in systems of taxation, he examines the nature and effect as shown by history of different forms of taxation, might be quoted as affording evidence of the comprehensive width of his knowledge; and his criticism in the same chapter of a single tax system might be adduced as proof of his sobriety of judgment and of his sound practical common sense, together with the first chapter of the book, in which he will not give his decision for either of the two contending views of taxation which have found the most favour with theoretical writers and practical politicians. Neither the theory of taxation according to ability to pay, nor the theory of taxation in return for services rendered by the State in the shape of the protection of person or property, is, he thinks, adequate; and no theory can be considered as definitive save the somewhat vague declaration that those who live under a State must pay such taxes as it is for the true permanent advantage of the State that they should. It is in the same spirit of sound common sense that he discusses the questions raised in connection with a progressive income tax. In the fourth chapter of the book he puts forward a classification of taxes, and this takes the form of a threefold division into (1) taxes on production, (2) taxes on possession, and (3) taxes on consumption. In Book III he supplies the student with an exhaustive description of the existing system of taxation in Germany, and in four chapters he gives an account of the different methods adopted for raising revenue for federal purposes and for those of the separate States and communes. The fourth and concluding book is devoted to those questions of public indebtedness which are continually becoming of increasing importance. The past history of the matter—with its facts and its theory—and the present position, are examined with that painstaking thoroughness and judicial caution which we have noticed as characterising the preceding portions of the volume.

Nuovi Documenti per la Storia del Banco di Napoli. Eugenio Tortora. Napoli: A. Bellisario, 1890.

This volume of upwards of seven hundred pages contains a mass of material relating to the history of the bank of Naples. It is divided into four chapters. The first is concerned with the foundation and constitution of the old Monts de Piété at Naples,

and the noteworthy laws and facts connected with pawnbroking from 1538 to 1793. In the second, the functions and services of the ancient banks form the subject of discussion. In the third attention is given to the cases of interference by the State in the shape of compulsory liquidation and fiscal appropriation, and to the attempts made to rehabilitate the institution of banking in the time of Ferdinand V and Murat, and the chapter covers a period of years extending from 1794 to 1815. In the fourth and final chapter, the evidence relating to the bank "delle due Sicilie" from 1816 to 1863 is investigated and presented in due order. The material on which the account is based consists of a number of documents, which are sometimes quoted in their entirety, while in other cases full extracts are made from them of such portions as relate to the question under discussion. The volume accordingly forms a valuable repository of facts freshly brought to light for the information and instruction of the student of banking. In the first chapter, for example, the foundation of the Mont de Piété at Naples, erroneously ascribed to an expulsion of Jews, the institutions of that character anterior in date to that established at Naples, and the theological controversy on the matter of money-lending, the Mont de Piété at Rome, and the application of religious enthusiasm to philanthropic activity, the establishment of the various institutions of the Monte dei Poveri, the Casa Santa dell' Annunziata, and the bank Ave Gratia Plena, the bank of Santa Maria del Popolo, of the Spirito Santo, of Sant' Eligio, of Santo Giacomo de Vittoria and of SS. Salvator, are illustrated by documentary evidence; and evidence of a similar character forms the contents of succeeding chapters, and amounts in all to a tolerably exhaustive account of the antecedents, the origin and the history of the bank of Naples for the space of three centuries, from 1538 to 1863.

V.—Additions to the Library.

Additions to the Library during the Quarter ended 30th June, 1890, arranged alphabetically under the following heads:—(a) Foreign Countries; (b) India, Colonial and other Possessions; (c) United Kingdom and its several Divisions; (d) Authors, &c.; (e) Societies, &c. (British); (f) Periodicals, &c. (British).

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Exportation of Meat from the Argentine Republic . . . 8vo. 1889	
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Austria and Hungary—	
Oesterreichisches Statistisches Handbuch. Achter Jahrgang, 1889	The Central Statistical Commission
Jahresberichte der k. und k. österreichisch-ungarischen Consulats-Behörden. 1889. 12 parts	
<i>Nachrichten über Industrie, Handel und Verkehr.</i> <i>Band xl—</i>	The Statistical Department, Ministry of Commerce
Heft 1 und 2. Statistik des Post- und Telegraphen- wesens, 1888.....	
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Bericht über die Thätigkeit des statistischen Seminars an der k.k. Universität Wien im Wintersemester 1886-87. 8vo.	
<i>Hungary—</i>	
Magyarországi Áruforgalma Ausztriával és más Országokkal. (Monthly Trade Returns.) Dec., 1889—Jan., 1890	The Royal Hungarian Statistical Bureau
<i>Statistisches Jahrbuch für Ungarn—</i>	
1887. Heft 12. Ungarns Feuerschäden	
1888. Heft 1. Politische Eintheilung und Bewe- gung der Bevölkerung. Heft 10. Staats- haushalt	
Ungarns Waarenverkehr mit Oesterreich und anderen Ländern, für das Halbjahr 1889, vom Juli bis ende Dezember	The Statistical Bureau of Prague
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* Foreign and Colonial Societies will be found under the various Countries or Possessions to which they belong.

Donations—Contd.

Donations.	By whom Presented.
(e) Societies, &c. (British)—Contd.	
British Association—Contd.	
Present State and Future Prospects of our Coal Supply: <i>E. Hull</i> . Our West African Possessions, their Economic Opportunities, and how they are Abused and Neglected: <i>H. R. Fox Bourne</i> . Agricultural Statistics: <i>W. Botly</i> . Methods of Forecasting the Yield of Crops: <i>W. Fream</i> . Improved Dwellings for the Poor: <i>D. G. Hoey</i> . Increase in Europe and America of Nominal or Fictitious Capital: <i>Hyde Clarke</i> . Relations between Industrial Conciliation and Social Reform: <i>L. L. Price</i> . Difficulties of Arbitration: <i>R. S. Watson</i> . Relation between Wages and the remainder of the Economic Product: <i>S. Webb</i> . Report of Committee on the Teaching of Science in Elementary Schools. Apprenticeship in the Engineering and Shipbuilding Trades: <i>Sir B. Browne</i> . Technical Education: <i>Dr. J. H. Rutherford</i> . On Manual or some form of Technical Instruction, a necessary element of a Compulsory System of Education: <i>E. J. Watherston</i> . Poor Law Progress and Reform exemplified in the Administration of an East London Union: <i>W. Vallance</i> . Poor Law Administration: <i>Rev. W. Bury</i> . A National Pension Fund: <i>Rev. W. M. Ede</i> . Home Colonisation: <i>Rev. H. V. Mills</i> . Third Report of Committee on Variations in the Value of the Monetary Standard.....	The Association
British Iron Trade Association. Annual Statistical Report on the Home and Foreign Iron and Steel Industries in 1889. 8vo.	"
Cobden Club. The Ceylon Starvation Question, by <i>C. S. Salmon</i> . 12mo. [1890]	The Club
East India Association. Journal. Vol. xxii, No. 2. 1890 ...	The Association
Friendly Society of Ironfounders. Annual Report for 1889. 8vo.	Sir R. W. Rawson, K.C.M.G., C.B.
Howard Association. Leaflets, &c. 8vo. 1889-90— Report. October, 1889	The Association
Christianity amongst Convicts. Reformation and Prevention	
Official Statistics and Reports (1890) on Capital Punishment	
On Advantageously Keeping Down the Rates	
Sentences producing Crime and Violence	
Some general observations on the Penalty of Death ...	Edward Bolton, Esq.
Summary of the Services of the Howard Association	
Women in Criminal and Pauper Administration. 1889	The Institute
Hull Royal Institution. Annual Reports of the Council and Transactions of the Hull Literary and Philosophical Society. Sessions 1886-87 to 1888-89. 3 parts, 8vo.	
Institute of Actuaries. Journal. Vol. xxviii, part 4. April, 1890	The Institution
Institute of Bankers. Journal. April, May, 1890.....	
Institution of Civil Engineers. Minutes of Proceedings. Vol. xcix, plates. 1890	The Society
Institution of Mechanical Engineers. Proceedings. No. 4, 1889. Plates, 8vo.	
Liverpool Literary and Philosophical Society. Proceedings. Vols. xli—xliii. 1886-87—1888-89. Plates ...	

Donations—Contd.

Donations.	By whom Presented.
(e) Societies, &c. (British)—Contd.	
Lloyd's Register of British and Foreign Shipping.	J. S. Keltie, Esq.
Warships of the World for 1888. 4to.	
London Chamber of Commerce. Journal. March—May, 1890	The Chamber of Commerce
Royal Agricultural Society. Journal. Third Series. Vol. i, part 1, plates, 8vo.	
Royal Geographical Society. Proceedings. March—May, 1890.....	The Society
Royal Institution of Great Britain. Proceedings. Vol. xii, part 3. 1889 (contains Index to vols. i—xii inclusive). Plates	
Royal Irish Academy—	The Institution
Cunningham Memoirs. No. 5. The Red Stars, by J. Birmingham. 1890	
Transactions. Vol. xxix, part 13. 1890.....	The Academy
Royal Society. Proceedings. Vol. xlv, Nos. 287 and 288. 1890	
Royal United Service Institution—	The Society
Journal. Vol. xxxiv, No. 152. Plates, 8vo. 1890	
List of Members to 1st Jan., 1890	The Institution
Society of Arts—	
Artisan Reports on the Paris Universal Exhibition of 1878. ix + 664 pp., 8vo. 1879	The Society.
Journal. (Current numbers.) 1890	
Surveyors' Institution. Transactions. Vol. xv, part 12; vol. xvi, parts 9 and 10; vol. xviii, part 5; vol. xxii, parts 3—12. 8vo., 1882-90	The Institution
(f) Periodicals, &c. (British).*	
Colonial Office List for 1888. Maps, 8vo.	S. Chapman, Esq.
STREET's List of Newspapers published in Great Britain and Ireland. 8vo. 1890	Messrs. Street, Bros.
Athenæum, The	
Bankers' Magazine (London), The	Current numbers
British Trade Journal, The	
Building Societies and Land Companies' Gazette, The	The Editor
Commercial World, The.....	
Economist, The	"
Fireman, The	
Insurance and Finance Leader, The.....	"
" Post, The	
" Record, The	"
Investors' Monthly Manual, The	
Iron and Coal Trades' Review, The	"
Machinery Market, The	
Nature	"
Policy-Holder Journal, The	
Railway Press, The.....	"
Review, The. Vol. xx, for 1889, and	
Sanitary Record, The	"
Shipping World, The	
Statist, The	"

* Foreign and Colonial Periodicals will be found under the various Countries or Possessions in which they are issued.

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- Building Societies. (273.) 1889.
 Endowed School Act, 1869. Report of Select Committee. (120.) 1887.
 Metropolitan Board of Works, Report. (326.) 1889.
 National Debt. (351.) 1889.
 Savings Banks. Depositors in, &c. (291.) 1889.
 Sessional Printed Papers. List of. (447.) 1888.
 Weights and Measures, Report of Inspector of. (302.) 1889.
 Wheat and Bread, Prices of. (449.) 1888.
 Woods and Forests. Report of Select Committee on. (284.) 1889.
 Adult Labour Laws Abroad. C-5866. 1889.
 Agricultural Departments Abroad. C-5865. 1889.
 Blind, Deaf, and Dumb. Reports of the Royal Commission on. C-5781-I, -II, -III. 1889.
 Bounties on Export. C-5867. 1889.
 British Army. General Annual Return. C-5874. 1889.
 Charity Commissioners. 4th, 24th, 29th, and 32nd Reports. 1857-85.
 Convict Prisons, Report of Directors of. C-5880 and C-5880-I. 1889.
 Elementary Education Acts. Reports of Royal Commission on. C-5485-I, -II, -III, -IV. 1888.
 Judicial Statistics of Scotland for 1887. C-5540.
 Labour Statistics. Trades Unions, Strikes, &c. C-5808, C-5809, C-5861. 1889.
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 Mines. Summaries of the Inspectors' Reports C-5780. 1889.
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 Shipping Casualties in 1887-88. C-5730.
 Vaccination. First Report of Royal Commission on. C-5845. 1889.

JOURNAL OF THE ROYAL STATISTICAL SOCIETY,

SEPTEMBER, 1890.

REPORT of the COUNCIL for the FINANCIAL YEAR ended 31st December, 1889, and for the SESSIONAL YEAR ending 24th June, 1890, presented at the FIFTY-SIXTH ANNUAL GENERAL MEETING of the ROYAL STATISTICAL SOCIETY, held at the Society's Rooms, 9, Adelphi Terrace, Strand, London, on the 24th of June, 1890.

FREDERICK HENDRIKS, ESQ., F.I.A., a Vice-President, in the Chair.

THE Circular convening the Meeting having been read and the Minutes of the last Ordinary Meeting read and confirmed, the following Report of the Council was taken as read:—

Report of the Council.

The Council have the honour to submit their Fifty-sixth Annual Report.

The roll of Fellows on the 31st December last compares as follows with the average of the previous ten years:—

Particulars.	1889.	Average for the previous Ten Years.
Number of Fellows on 31st December	1,060	886
Life Members included in the above	175	144
Number lost by death, withdrawal, or default	69	55
New Fellows elected (and four resignations cancelled)	70	86

Since the 1st January last, 46 new Fellows have been elected, making the present number 1,081.

The Society has to lament the deaths of the following Fellows during the past year:—

		Date of Election.
	<i>c d</i> Right Hon. Lord Addington	1853
<i>p</i> (1) <i>c</i>	Sir Edward Baines	1858
<i>p</i> (1) <i>c</i>	Robert Baxter	1876
	William Blades	1883
	W. John Bush	1883
	Sir T. E. Colebrooke, Bart.	1838
<i>p</i> (1)	William Charles Copperthwaite	1843
	Frederick William Cosens	1883
	Hon. Sir Robert A. Dalryell, K.C.I.E., C.S.I. .	1869
	William H. Greening	1881
	Anderson Kirkwood, LL.D.	1879
<i>d</i>	John Benjamin Kyshe	1869
	Angus Macmillan, M.D.	1887
	Hon. Rao Saheb V. N. Mandlik, C.S.I.	1883
	T. H. Richardson	1884
<i>p</i> (6) <i>c d</i>	William Lucas Sargant	1860
	Professor David B. Smith, M.D., F.R.C.P. ...	1888
	Robert Paulson Spice, C.E.	1881
	Frank Stone	1883
	Colonel George Tomline	1855
	William John Vian	1874
<i>p</i> (1) <i>d</i>	William Westgarth	1876

Honorary Fellow.

d S. E. M. Charles Baron de Czoernig (Austria) 1854

c Indicates those who had served on the Council.

d Indicates those who had been Donors to the Library.

[contributed.

p Indicates those who had contributed Papers, with the numbers respectively

The President in his Opening Address delivered at the commencement of the present session, referred at length to the services of Lord Addington, Mr. W. L. Sargant, Mr. Robert Baxter, and Mr. William Westgarth.

Of the deaths that have occurred since the delivery of the Presidential Address may be mentioned those of: (1) Sir Edward Baines, who joined the Society in 1858, contributed a paper to the *Journal* in 1859, and served on the Council in 1862. (2) Mr. J. B. Kyshe, who became a Fellow in 1869; was formerly Registrar-General of Mauritius, and compiler of the "Mauritius Almanac" and Colonial Register," which publication he presented regularly to the Society over the long period of sixteen years, from 1870 to 1885. (3) Mr. William Blades, who joined the Society in 1883, and was a distinguished Bibliographer. (4) Sir T. E. Colebrooke, the distinguished President of the Royal Asiatic Society, who had been a Fellow of the Royal Statistical Society for upwards of half a century.

The financial condition of the Society continues to be satisfactory. The following table gives, for purposes of comparison, the

different sources of income for the year 1889, together with the same particulars for the previous five years:—

Receipts per	1889.	1888.	1887.	1886.	1885.	1884.	Average for the Five Years previous to 1889.
	£	£	£	£	£	£	£
Dividends	70	73	73	73	73	88	76
Annual Subscriptions...	1,678	1,686	1,621	1,583	1,462	1,447	1,560
Compositions	126	334	126	231	63	294	210
Journal sales	229	171	188	180	188	207	187
Advertisements in } Journal	12	28	21	19	26	19	23
Miscellaneous refunds	—	—	—	—	—	84	—
	2,115	2,292	2,029	2,086	1,812	2,139	2,056
Legacy of Dr. Guy ...	—	—	—	—	250	—	—
Sale of 1,000 <i>l.</i> New } 3 per Cent. Stock }	—	—	—	—	—	1,007	—
	—	—	—	—	2,062	3,146	—

On the other hand, the expenditure has been as follows:—

Expenditure for	1889.	1888.	1887.	1886.	1885.	1884.	Average for the Five Years previous to 1889.
	£	£	£	£	£	£	£
Rent, rates, and taxes...	258	304	237	227	310*	56	227
Fire, lights, and water, } repairs, furniture, &c. }	142	69	81	72	88	—	62
Salaries, wages, and } pension	405	444	419	420	392	394	414
Advertising, postage & } delivery of Journals, } stationery, & sundry } printing	229	248	209	256	241	248	240
Ordinary meeting Ex- } penses	27	27	39	24	23	24	27
Journal	623	711	609	735	625	645	665
Library	146	58	87	32	27	38	48
Miscellaneous	74	78	64	76	50	65	67
	1,904	1,939	1,745	1,842	1,756	1,470	1,750
Catalogue and Index } to Library	—	—	280	31	247	392	—
Mr. F. Piercy for Por- } trait of Dr. Guy ... }	—	22	—	—	—	—	—
Removing to 9, Adelphi } Terrace	—	—	—	—	67	1,203	—
Mr. Pochin's Prize } for the Newmarch } Memorial Essay	—	—	—	—	100	—	—
Howard Medal Prize } Essays	—	—	—	—	—	23	—
Jubilee Volume	—	—	—	233	—	—	—
Charter	—	42	110	—	—	—	—
General Index to Jour- } nal, part 4	156	—	—	—	—	—	—
	2,060	2,003	2,135	2,106	2,170	3,088	—

* Of this sum about 114*l.* belongs to the expenditure of 1884.

A comparison of the principal figures at intervals of ten years in the following table, will show the progress of the Society from an early date:—

*Comparison of the Condition of the Society at Intervals of Ten Years,
on 31st December.*

Year.	Number of Fellows.	Ordinary		Amount Invested.	Liabilities.	Assets over Liabilities.	Year.
		Income.	Expenditure.				
		£	£	£	£	£	
1839	398	819	849	867	306	852	1839
'49	387	734	764	867	383	768	'49
'59	357	729	743	867	287	1,757	'59
'69	400	810	826	1,136	115	1,961	'69
'79	783	1,698	1,427	2,283	238	4,195	'79
'89 ...	1,060	2,115	1,904	2,500	328	6,242	'89

The following table gives the particulars for each year of the last decade on 31st December:—

Year.	Number of Fellows.	Ordinary Income.	Expenditure.	Amount Invested.	Liabilities.	Assets over Liabilities.	Year.
		£	£	£	£	£	
1880 ...	808	1,902	1,517†	2,572	214	4,614	1880
'81	807	1,649	1,400	2,869	192	4,935	'81
'82	786	1,838	1,581‡	3,071	203	5,240	'82
'83	860	1,778	1,635‡	3,500	347	5,246	'83
'84	909	2,139	3,088*‡	2,500	968	4,188	'84
'85	928	1,812	2,170*‡§	2,500	1,169	3,791	'85
'86	943	2,086	2,106‡||	2,500	741	5,163	'86
'87	977	2,029	2,135‡¶	2,500	624	5,268	'87
'88 ...	1,059	2,292	2,003¶	2,500	496	5,527	'88
'89 ...	1,060	2,115	2,060**	2,500	328	6,242	'89

* Affected by expenses incident to moving into new premises.

† Affected by expenses attending the alteration, &c., of the meeting room at King's College.

‡ Affected by expenses attending the preparation of the new Catalogue and Index to the library.

§ Includes 100l. given by Mr. H. D. Pochin for the Newmarch Memorial Prize Essay.

|| Includes balance of cost of Jubilee volume.

¶ Affected by special outlay for the Charter.

** Affected by expenses attending the preparation of part 4 of the General Index to the

The average annual receipts from the sale of the Society's *Journal* have been as follows:—

For the ten years 1841-50	£56
" '51-60	83
" '61-70	97
" '71-80	155
For the last nine years '81-89	187

The income of the Society in 1889 was of the ordinary character. On comparing the figures for 1889 with the average of those for the previous five years, it will be noticed that the receipts from Annual Subscriptions and *Journal* sales (two important sources of income) are materially above—while the receipts from Dividends, Compositions, and Advertisements in *Journal* are below the average.

As regards the Expenditure for the same period, Rent, &c., Fire, Lights, &c., Library and Miscellaneous are above—while Salaries, &c., Advertising, and the *Journal*, are below the average.

In explanation of those heads of expenditure that are above the average, it may be stated as regards (a) *Rent, &c.*—That the increase is apparent only, through a payment of 25*l.* for sub-rent not having been received in time to come into the year's accounts; (b) *Fire and Lights, &c.*, which cover *Repairs, Furniture, &c.*—That the increase in this case is special, and was caused by the painting of the exterior of the premises, necessary under the terms of the lease; some repairs and re-decorations inside; the purchase of gas fires; the fitting of electric bells; and the putting up of a considerable amount of book shelving in the basement of the premises, to meet the steady growth of the library; (c) *Library*.—That the increased expenditure under this head is chiefly for binding, and is likely to be maintained, if not increased, during the next few years, as the majority of the books in the library require either binding or re-binding, and the time has arrived when the Society will be able to allot a larger portion of its funds to the improvement of the library than it has been able to devote in the past. The small increase under the head of (d) *Miscellaneous*, arises from the necessity of employing a commissionaire on two different occasions during the temporary illness of the Society's messenger.

The payment of 156*l.* for the fourth part of the General Index to the *Journal* during the past year, seems to have brought to a close a series of extra expenses, viz., the move from King's College, the new Catalogue and Index to the Library, the Society's Jubilee, the Charter, and the fourth part of the General Index to the *Journal* before mentioned, which have not only prevented any investment of a portion of the annual income of the Society during the last seven years, but necessitated the sale of 1,000*l.* stock to meet the heavy

expenses of moving from King's College in 1884; and it is with considerable satisfaction that the Council are able to report having purchased as an investment, out of the income of 1890, 400*l.* of the new $2\frac{3}{4}$ per cent. consols.

The cordial thanks of the Council have been tendered, on behalf of the Society, to the Auditors for their honorary services in auditing the Treasurer's accounts for the past year.

The Royal Literary Fund and the Institute of Chemistry continue to be, as before, tenants of the Society.

Permission to hold the Ordinary Meetings of the Society in the Theatre of the School of Mines in Jermyn Street has been continued through the courtesy of the Education Department, and the Council have again conveyed to the Lords of the Committee of Council on Education their thanks for the accommodation thus afforded.

The Society re-assembled in November, and the papers read and the members elected at each of the monthly meetings have been as follows :—

SESSION 1889-90.

First Ordinary Meeting, Tuesday, 19th November, 1889.

The President, DR. T. GRAHAM BALFOUR, F.R.S., in the Chair.

The following were elected Fellows :—

Frank Allen.

John Andrew Anderson.

Andrew Wallace Barr.

Edwin Cannan, M.A.

Charles Courtney Cramp, C.E.

Leopold de Rothschild, J.P., D.L.

Sir Walter Eugene de Souza.

Louis Estevan G. de Woolfson.

William Bennett Doubleday.

Alfred Foot.

William Henry Grenfell, B.A., J.P., D.L.

George Grosvenor.

Quintin Hogg.

John Lowles.

John C. McVail, M.D.

Harry H. Marks.

Brigade-Surgeon William Nash.

Henry William Newton.

Moung Hla Oung.

Herbert H. Raphael.

Thomas Reed.

George Armitage Smith, M.A.Lond.

Charles Tarling.

Stephen Seaward Tayler.

James Tims.

George Alexander Touch.

J. W. Tyler.

The President delivered an Opening Address.

A cordial vote of thanks to the President for his Address was moved by Sir Rawson W. Rawson, and seconded by Mr. Frederick Hendriks.

Second Ordinary Meeting, Tuesday, 17th December, 1889.

The RIGHT HON. G. J. GOSCHEN, M.P., a Past President, in the Chair.

The following were elected Fellows:—

Major Alexander Finlay.	William Kempson.
William E. Grigsby, M.A., LL.D.	Major Clifford Probyn.
Pelly Hooper.	Henry Rawcliffe, J.P.
William Henry Thodey.	

Mr. Robert Giffen read a Paper on “Accumulations of Capital
“in the United Kingdom in 1875-85.”

In the discussion that followed the undermentioned took part:—Mr. F. Hendriks, Mr. F. B. Garnett, Professor H. S. Foxwell, Mr. J. S. Jeans, Sir R. W. Rawson, Mr. S. Bourne, Major P. G. Craigie, Mr. B. Kidd, and the Chairman.

Third Ordinary Meeting, Tuesday, 21st January, 1890.

FREDERICK HENDRIKS, Esq., F.I.A., a Vice-President, in the Chair.

The following were elected Fellows:—

Alfred E. Ann.	Joseph E. Faulks, B.A., F.I.A.
Frederick Back.	Ernest Gardner.
George R. Beardmore, L.R.C.P., &c.	Rev. Arthur Harrison, B.A.
Edward Bolton.	Frederick Hinde.
Henry Clarke.	Thomas J. Pittar.
Robert Williams Davey, B.A.	William A. Smith.
W. Hyett Dickinson.	John Tenney.
John Percy Evill.	Charles C. Turnbull.

Charles Worroll.

Mr. Rowland Hamilton read a Paper on “Popular Education
“in England and Wales since 1882.”

In the discussion that followed the undermentioned took part:—Dr. J. G. Fitch, Rev. J. J. Coxhead, M.A., Sir R. W. Rawson, Mr. T. H. Elliott, Mr. S. Bourne, Mr. A. E. Bateman, Major P. G. Craigie, Sir J. Danvers, and the Chairman.

Fourth Ordinary Meeting, Tuesday, 18th February, 1890.

The President, DR. T. GRAHAM BALFOUR, F.R.S., in the Chair.

The following were elected Fellows:—

Frederick Bell, F.I.A.	John Freestone.
Robert Alexander Bellman.	William Howarth.
Arthur Berry, M.A.	James Leakey.
F. Carter Cotton.	Andrew Davidson McKay.
A. L. Halkett Dawson, M.A.	Marc Armand Ruffer, M.A., M.D.
Rev. Harward Turner.	

Mr. N. A. Humphreys read a Paper on “Statistics of Insanity in England, with special Reference to its alleged Increasing Prevalence.”

The undermentioned took part in the discussion that followed:—Dr. Hack Tuke, Dr. G. H. Savage, Mr. F. Hendriks, Dr. G. B. Longstaff, Mr. J. Peeke Richards, and Dr. H. Hayes Newington.

Fifth Ordinary Meeting, Tuesday, 18th March, 1890.

The President, DR. T. GRAHAM BALFOUR, F.R.S., in the Chair.

The following were elected Fellows:—

William R. Lawson.	Hon. John X. Merriman.
James McAuslane.	Thomas Tyldsley.
Ernest Walford.	

The undermentioned were elected Honorary Fellows:—

- Señor D. Francisco Latzina (Argentine Republic),
 Director of the Federal Statistical Bureau, Buenos Ayres.
- Dr. Antoine Beaujon (Netherlands),
 Director of the Statistical Institute, Amsterdam.
- Dr. Elis Sidenbladh (Sweden),
 Director of the Central Statistical Bureau, Stockholm.
- Dr. Guillaume (Switzerland),
 Director of the Federal Statistical Bureau, Bern.
- Dr. K. T. Inama-Sternegg (Austria),
 President of the Central Statistical Commission, Vienna.
- M. Alfred de Foville (France),
 Chief of the Bureau of Statistics, Ministry of Finance, Paris.
- Herr Karl Julius Emil Blenck (Germany),
 Director of the Royal Prussian Statistical Bureau, Berlin.
- M. Nicolas Troïnitsky (Russia),
 Director, Central Statistical Committee, Ministry of Interior,
 St. Petersburg.
- Professor Richmond Mayo Smith, M.A. (United States),
 Professor of Political Economy, Columbia College, New York.
- Sir Robert Hart, G.C.M.G. (China),
 Inspector-General, Chinese Imperial Maritime Customs, Peking.

Dr. William Ogle read a Paper on “Marriage-Rates and Marriage-Ages, with special Reference to the Growth of Population.”

The undermentioned took part in the discussion that followed:—Mr. F. Hendriks, Mr. H. M. Paul, Mr. S. Bourne, Dr. G. B. Longstaff, Sir R. W. Rawson, Mr. A. E. Bateman, Rev. I. Doxsey, Mr. J. B. Martin, Major P. G. Craigie, and the President.

Sixth Ordinary Meeting, Tuesday, 22nd April, 1890.

FREDERICK HENDRIKS, Esq., F.I.A., a Vice-President, in the Chair.

The following were elected Fellows:—

Frederic Sillery Bishop, M.A., J.P.	|	Hon. John Jay Knox.
John Jepson.	|	Herbert Reade.

Mr. George Grosvenor read a Paper on "The Abatement in Crime in England and Wales during the Twenty Years ended 1887-88."

The undermentioned took part in the discussion that followed:—Mr. James Monro, C.B., Mr. T. L. M. Browne, Mr. R. Hamilton, Mr. T. H. Elliott, Mr. W. Hazell, and the Chairman.

Seventh Ordinary Meeting, Tuesday, 20th May, 1890.

SIR RAWSON W. RAWSON, K.C.M.G., C.B., a Past President, in the Chair.

The following were elected Fellows:—

David Octavius Croal.		Robert Lloyd Woolcombe, LL.D.
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Mr. L. L. Price, M.A., read a Paper on "The Position and Prospects of Industrial Conciliation."

The undermentioned took part in the discussion that followed:—Mr. Sydney Buxton, M.P., Mr. George Howell, M.P., Mr. C. M. Norwood, Mr. S. B. Boulton, Mr. W. H. Hey, and the Chairman.

Eighth Ordinary Meeting, Tuesday, 17th June, 1890.

The President, DR. T. GRAHAM BALFOUR, F.R.S., in the Chair.

The following were elected Fellows:—

Richard Frederick Crawford.	|	John Kirkland Mackay.
W. L. S. Hewins, B.A.	|	Gordon William Miller.
Robert Batson Joyner.	|	William Hamilton Weller.

Alexander Winter.

Mr. George G. Chisholm, M.A., read a Paper on "An Examination of the Coal and Iron Production of the principal Coal and Iron producing Countries of the World; with reference to the English Coal Question."

The undermentioned took part in the discussion that followed:—Mr. J. S. Jeans, Mr. H. M. Paul, Mr. John Glover, Mr. Rowland Hamilton, Mr. T. Freeman, and Sir R. W. Rawson.

The Council wish to renew the appeal made in their last report, for a more direct and larger measure of co-operation from the Fellows of the Society on the following points:—

- (a) Papers to be read before the Society,
- (b) Attendance at the Ordinary Meetings,
- (c) Contributions to the *Journal*,
- (d) Donations to the Library,
- (e) Increase of Membership,

and would particularly urge the first two points. Any Fellow who may feel inclined to undertake the preparation of a paper, is cordially invited to place himself in communication with the Secretaries, or any member of Council, who will be pleased to afford him every assistance in their power.

The Council are pleased to report that during the past year the increased accommodation at the disposal of the Fellows has attracted a larger number of readers; and also that the special regulations for enabling Fellows under certain restrictions to take out from the library books of reference and similar works that may be required in the preparation of papers or otherwise, and for obtaining books from the library during the month of September, when the rooms are closed, have been appreciated.

The Library, which was estimated in the last report to consist of about 26,000 volumes, has received some considerable accessions. The average annual addition of 1,200 volumes has been maintained during the past year, and includes certain special donations from Austria, Hungary and Switzerland, the India Office, the General Register Office, and Mr. N. S. Garland, of Ottawa, Canada, towards completing defective series and other wants as indicated in "Desiderata" in each part of the *Journal*.

During the current year the Society has received the following special donations:—

- (a) From Mrs. William Newmarch, about 350 volumes, to be added to those already in the Library, as a memorial of her late husband.
- (b) From Mr. J. S. Keltie, 170 works, chiefly Foreign Statistical Publications, not hitherto in the Library.
- (c) From the Royal Society, 88 volumes (including 70 volumes of "*Revue des Deux Mondes*," 1849-62).
- (d) From Mrs. Bagehot, 41 volumes of well bound old Blue Books which belonged to the late Mr. Walter Bagehot.

The third biennial meeting of the International Statistical Institute, founded at the Jubilee Meeting of the Royal Statistical Society in 1885, was held in Paris in September last, under the presidency of Sir Rawson W. Rawson. Its proceedings were fully reported in Dr. Balfour's presidential address.

The meeting of the British Association in 1889, was held at Newcastle-upon-Tyne, where the Society was as usual well represented in Section F (Economic Science and Statistics), and Papers were read by the following Fellows of the Society:—Professor F. Y. Edgeworth, M.A., D.C.L. (President of the Section), Professor C. F. Bastable, M.A., Mr. S. Bourne, Mr. Hyde Clarke, the Rev. W. Cunningham, M.A., D.D., Professor W. Fream, B.Sc.Lond., and Mr. L. L. Price, M.A.

In reference to the action of the Society in the matter of the forthcoming census of 1891, as detailed in last year's report, the Government have appointed a Departmental Census Committee, consisting of:—

Right Hon. Leonard H. Courtney, M.P.,
The Registrar-General of England,
Sir Reginald E. Welby, K.C.B.,
Charles A. Whitmore, Esq., M.P.,
Sir Hugh Owen, K.C.B.,
Charles Booth, Esq.,
R. C. Munro-Ferguson, Esq., M.P.,
Mr. T. H. Elliott (Secretary).

Invitations have been received asking the Fellows of the Society to take part in—

- (a) The International Penitentiary Congress, which has been held at St. Petersburg during the present month; and
- (b) The Tenth International Medical Congress, to be held at Berlin from the 4th to 9th August, 1890.

In the first case the Council nominated Dr. F. J. Mouat and Mr. John B. Martin as delegates to attend the International Penitentiary Congress at St. Petersburg; and in view of the proposed celebration of the centenary of the death of John Howard on that occasion, a cast of the Society's "Howard Medal" was forwarded through Dr. Mouat, in the name and on behalf of the Society, to the President of the Congress.

The Council have been informed that H.R.H. the Prince of Wales has accepted the post of President of the International Congress of Hygiene and Demography, which will be held in London next year; and this Society has been requested to appoint a committee to assist the Organising Committee of that Congress in forming the Demographic Section. The Council have accordingly appointed such a committee, consisting of Dr. Balfour, Mr. Frederick Hendriks, and Mr. Rowland Hamilton.

The following list of Fellows proposed as President, Council, and Officers of the Society for the Session 1890-91 is submitted for the consideration of the meeting:—

COUNCIL AND OFFICERS FOR 1890-91.

PRESIDENT.

FREDERIC JOHN MOUAT, M.D., LL.D.

COUNCIL.

Arthur Herbert Dyke Acland, M.P.	Frederick Halsey Janson, F.L.S.
*Arthur H. Bailey, F.I.A.	J. Stephen Jeans.
Alfred Edmund Bateman.	Charles Malcolm Kennedy, C.B.
Charles Booth.	*Sir V. H. Kennett-Barrington, M.A., LL.M.
*Stephen Bourne.	George B. Longstaff, M.A., M.B.
Edward H. Carbutt, M.I.M.E., J.P.	John Biddulph Martin, M.A.
Hyde Clarke.	Richard Biddulph Martin, M.A.
Major Patrick George Craigie.	*Francis G. P. Neison, F.I.A.
*Rev. Wm. Cunningham, M.A., D.D.	William Ogle, M.A., M.D., F.R.C.P.
Professor F. Y. Edgeworth, M.A., D.C.L.	*R. H. Inglis Palgrave, J.P., F.R.S.
Thomas Henry Elliott.	Henry Davis Pochin, J.P.
Professor H. S. Foxwell, M.A.	Francis Sharp Powell, M.P.
Frederick Brooksbank Garnett, C.B.	Richard Price-Williams, M.Inst. C.E.
Rowland Hamilton.	*Sir John H. Puleston, M.P.
Frederick Hendriks, F.I.A.	Edward Seaton, M.D., F.R.C.P.

Those marked * are new Members of Council.

TREASURER.

Richard Biddulph Martin, M.A.

HONORARY SECRETARIES.

John Biddulph Martin, M.A. | Alfred Edmund Bateman,
Major Patrick George Craigie.

FOREIGN HONORARY SECRETARY.

John Biddulph Martin, M.A.

The abstract of receipts and payments, and the balance sheet of assets and liabilities on 31st December, 1889, are subjoined, together with the report of the Auditors on the accounts for the year 1889:—

(I.)—ABSTRACT of RECEIPTS and PAYMENTS for the YEAR ending
31st DECEMBER, 1889.

RECEIPTS.			PAYMENTS.		
	£	s. d.		£	
Balance in Bank, 31st December, 1888 ... }	£209	14 5	Rent	£316	17 6
Balance of Petty Cash. 24 3 5			Less sublet	100	- -
" Postage } 2 4 5					216 1
Account }			Rates and Taxes		41
_____		236 2 3	Fire, Lights, and Water		38 1
Dividends on 2,500 <i>l.</i> Consols Stock 70 1 8			Repairs, Furniture, &c.		103 1
Subscriptions received:—			Salaries, Wages, and Pension		405
44 Arrears	£92	8 -	Journal, Printing	£536	12 9
725 for the year } 1,522 10 -			" Annual Index 5 5 -		
1889			" Shorthand } 19 8 6		
30 in Advance	63	- -	Reporters }		
—		1,677 18 -	" Literary } 61 12 -		
799			Services }		622 1
—			Ordinary Meeting Expenses		26
6 Compositions.....	126	- -	Advertising		57
Journal Sales	229	1 5	Postage and delivery of Journals... 87 1		
Advertisements in Journal	11	16 3	Stationery and Sundry Printing ... 83 1		
Total.....	£2,350	19 7	Library		145 1
			Incidental Expenses		73 1
					1,903 1
			General Index to } Journal, Part 4, } £7 10 -		
			Mr. Casson		
			General Index to } Journal, Part 4, } 148 9 4		
			Blades and Co.		155 1
					2,059 1
			Balance per Bank } £262 5 4		
			Book		
			Balance of Petty Cash 27 8 3		
			" Postage ... 1 14 2		
					291
			Total	£2,350	1

(Signed)

" J. O. CHADWICK, F.C.A.,

" SAM. DYER NIX, F.C.A.,

" GÉRARD VAN DE LINDE, F.C.A.,

} Auditor

" 13th February, 1890.

This balance is exclusive of the present value of the absolute Reversionary Interest bequeathed to the Society by the late Dr. Guy.

13th February, 1890.

“REPORT OF THE AUDITORS FOR 1889.

“The Auditors appointed to examine the Treasurer’s Accounts of the Society for the Year 1889,

“REPORT:—

“That they have compared the Entries in the Books with the several Vouchers for the same, from the 1st January to the 31st December, 1889, and find them correct, showing the Receipts (including a Balance of 236l. 2s. 3d., from 1888) to have been 2,350l. 19s. 7d., and the Payments 2,059l. 11s. 10d., leaving a Balance in favour of the Society of 291l. 7s. 9d. at the 31st December, 1889.

“They have also had laid before them an Estimate of the Assets and Liabilities of the Society at the same date, the former amounting to 6,570l. 9s. 8d., and the latter to 328l. 6s. 9d., leaving a Balance in favour of the Society of 6,242l. 2s. 11d., exclusive of the present value of the absolute Reversionary Interest bequeathed to the Society by the late Dr. Guy.

“The amount standing to the credit of the Building Fund at the end of the year 1889, was 226l. 16s. 9d., invested in 216l. 19s. -d. Metropolitan Three and a Half per Cent. Stock, in the name of the Treasurer, R. B. Martin, Esq.

“They have verified the Investments of the Society’s General Funds and Building Fund, and also the Banker’s Balance, all which were found correct.

“They further find that at the end of the year 1888 the number of Fellows on the list was 1,059, which number was diminished in the course of the year to the extent of 69, by Deaths, Resignations, and Defaulters, and that 66 new Fellows were elected, and the Resignations of 4 Fellows were cancelled, leaving on the list on the 31st December, 1889, one thousand and sixty (1,060) Fellows of the Society.

(Signed)

“J. O. CHADWICK, F.C.A.,

“SAM. DYER NIX, F.C.A.,

“GÉRARD VAN DE LINDE, F.C.A.,

} Auditors.

“13th February, 1890.”

PROCEEDINGS of the FIFTY-SIXTH ANNUAL GENERAL MEETING.

THE SECRETARY read the circular convening the meeting and also the minutes of the last ordinary meeting, which were confirmed.

The report of the Council having been taken as read—

The CHAIRMAN (Frederick Hendriks, Esq., F.I.A., Vice-President) said that in consequence of the unavoidable absence from London of their respected President, he had been requested, as one of the Vice-Presidents, at rather short notice, to perform the duties of chairman. The report dealt with the proceedings in such a minute form, that it provided ample material for any Fellow to criticise. The Council were very desirous that their acts and proceedings should be freely discussed. He was happy to say that the number of members was greater than it had ever before been. The number now was no less than 1,081, which was 195 more than the average of the last ten years, and 23 more than the number at the date of their annual meeting of last year. If consideration were given to the fact that they were rather an old Society, that the average age of Fellows might be taken at something like 57 years, and that therefore they expected about twenty-five deaths a year, while of course there were a certain number of withdrawals as in all other societies, he thought they had very great cause for congratulation on the favourable aspect of this their Census of Fellows. He remembered about thirty-five years ago, their then president, Colonel Sykes, M.P. for Aberdeen, and Chairman of the East India Company, stating that their numbers were under 400, and that he thought they would reach the zenith of their prosperity if they ever attained to 500 members. They had now more than doubled that figure. The report proceeded to mention the deaths of the more eminent members of the Society during the past year. Of course there might be omissions in not giving the fullest particulars of the merits of all the Fellows who had deceased in the past year, but the Council could not do more than name the especial public services of the most distinguished members of the Society. He believed that the meeting would receive with satisfaction the figures showing the financial condition of the Society. The growth or decrease of some of the items was fully explained in the report itself, and therefore he did not think it necessary to occupy time in more than alluding to this. The fact remained that they had an income last year of 2,115*l.*, and whilst their expenditure was 2,060*l.*, their normal expenditure would have been only 1,904*l.*, had it not been accidentally increased by the special charges connected with the General Index to the *Journal*. There were other special charges in the recent conduct of the Society's affairs, which would not arise in coming years, because during the last few years they had had to face circumstances not

likely to recur for a long time to come, namely, first, the removal from King's College to their present home, which entailed also the expense of the removal of the Library; secondly, expenses connected with their Jubilee and the issue of an extra volume in memory of that event in their career; thirdly, the General Index to the *Journal*; and fourthly, the expenses connected with their Royal Charter. They had, however, been able to save enough money to purchase 400*l.* of New $2\frac{3}{4}$ per Cent. Consols out of the current income of the present year (31st December, 1889-90), which did not yet fall into account. He thought they would agree with him in considering that all this was evidence of a very fair position to be in with regard to income and expenditure. The amount of their invested capital—apart from other assets—had thus increased since the date of the report, and now amounted to 2,900*l.* Consols, besides 216*l.* 19*s.* stock belonging to their Building Fund, while their liabilities had decreased and were now 168*l.* less than last year, being only 328*l.* as compared with 496*l.* in the preceding year. The figures given in the report and showing other assets of 3,870*l.* 9*s.*, besides invested capital just referred to, were entirely exclusive of a very considerable reversionary interest to which they were entitled on the death of a lady, the tenant for life, under the will of their late president, Dr. Guy, F.R.S. That reversionary interest increased by accumulations during her life, and it now amounted in present value to several thousand pounds, but they did not enter it as an asset. There was however a note to that effect in the balance sheet, certified by the auditors, in order that it might be ear-marked and not lost sight of. The sales of the Society's *Journal* had largely increased in 1889, and the amount received was 229*l.* That was a very gratifying feature, because it showed that more than 1,000 copies of the *Journal* had been sold to the general public in a single year. It offered unmistakeable proof that the quality of the articles in the *Journal* was well kept up. The report proceeded to give an account of the various papers that had been read; they treated of subjects of great public importance, and it so happened that last year they exclusively related to subjects of Imperial English interest. Although as a Society they were always glad when papers were read at their meetings which dealt with matters relating to all parts of the world, whether British or foreign, yet the success of their *Journal* was mainly due to the value of the papers that treated more particularly upon thoroughly English statistics. The exhortation of their President last year as to the necessity of keeping up the standard of the papers read, had been adequately attended to in the past session. He thought the list of papers left nothing to be desired. They had held eight meetings, and had been occupied with subjects as interesting as any that could well come before such a Society. He was sure that those who read the report would not blame the Council for in it again drawing their attention to the desirability of supplying papers of good quality, of sending contributions to the *Journal* of statistics which were not of a nature to be read at a meeting, of donations to the library, and of using their best endeavours to secure an increase in the number of members, and of larger attendances at the ordi-

nary meetings. The report mentioned with satisfaction that the Library was very much more largely resorted to than formerly. That was not to be wondered at, because their collection was a very important one. They now had nearly 28,000 volumes, including during the current year some especially liberal donations from Mrs. William Newmarch, Mr. Keltie, the Royal Society, and Mrs. Walter Bagehot. The report then referred to various meetings of other societies and associations, and to a meeting which would be held in London next year, and in which it was hoped that the members of the Statistical Society would take a considerable share. Dr. Ogle, Sir Douglas Galton, Dr. Mouat, and Mr. Longstaff were members of the General Committee of the projected meeting. It was called the International Congress of Hygiene and Demography, and would be under the presidency of H.R.H. the Prince of Wales, Honorary President of the Royal Statistical Society. The report concluded with the usual abstract of receipts and payments, and the balance sheet was vouched by three members who were also Fellows of the Institute of Chartered Accountants; the letters after their names carried weight as a guarantee of the accuracy and good faith with which the book-keeping of this Society is conducted. He took pleasure in remarking that the name of their late member of the Council, Mr. Chadwick, was so frequently connected with the audit of the Society, and in conclusion he would move "That the report of the Council, the Abstract of Receipts and Payments, the Balance Sheet of Assets and Liabilities, and the Report of the Auditors for 1889 be adopted, entered in the minutes, and printed in the *Journal*."

The Hon. Mr. JUSTICE PINHEY seconded the motion.

Mr. HYDE CLARKE said he remembered when the Society was in the stationary position described by the chairman, and when the addition of two or three Fellows was regarded as an element in the condition of the Society. In the change which had taken place the chairman was an active participant. He was very much pleased with one thing that the chairman had mentioned, that while in no degree derogating from the importance of foreign statistics, it was very important to keep up English statistics. The English speaking population had been enumerated as 100 millions, and the probability was that after the census in the United States in 1890, and that here in 1891, that number would be increased to 120 millions or 140 millions. Mr. Russell Lowell had very properly pointed out the great importance of English speaking population in diffusing culture, instruction, and liberty throughout the world, and it would be well to keep up statistics with regard to English speaking people. People were apt to look at these islands, without thinking of what had been done beyond the Atlantic, and in other parts of the world. If the whole mass of statistics was looked at it would be seen that the work which had been done in English speaking countries constituted a large mass, not only of statistics, but also of valuable material. At the beginning of the Society statistics were new in this country.

George Richardson Porter, whom he remembered, was the first to make statistics part of the official programme of the ministry, and since then it had been the work of the Society to promote the cultivation of statistics throughout the empire, and likewise to stimulate the exertions of their brethren in the United States.

Sir R. W. RAWSON although agreeing with Dr. Clarke in the main, hoped that the Society would not deal exclusively with statistics relating to English speaking countries, because there was a very great deal to be learned from other countries. He had that morning received the annual statistical volume of the Japanese Government, and he could not imagine anything more interesting than to compare the statistics of Japan with those of England. Therefore, although the papers read last year were of very high value, he hoped there would be no exclusion of foreign statistics. If any member was disposed to take up the Japanese statistics, he would be happy to place the volume in his possession.

The motion was then agreed to unanimously.

A ballot having been taken, the scrutineers—Mr. E. H. Carbutt and Mr. W. H. Millar—reported that the President, Council, and officers for the ensuing year 1890-91, as proposed by the Council, had been unanimously elected.

Sir R. W. RAWSON proposed that a cordial vote of thanks be presented to the retiring President, Council, and officers, for their services during the past year, and to the Chairman for presiding on the present occasion. He was happy to have this opportunity of testifying to the excellent example which their late President had set, by the zeal which he had manifested in the affairs of the Society, by his admirable conduct in the chair at the evening meetings, by the attention he had given to the business, and by the regularity of his attendance on all occasions both on the Council and on the Executive Committee. He did not cheat the Society of an annual address as did his immediate predecessor, and in his annual addresses he did not try the patience of the members in the manner that his penultimate predecessor had done. They also certainly owed a vote of thanks to their present chairman for the admirable manner in which he had digested the report for their information, and so spared members the trouble of reading through that lengthy document.

Mr. A. H. BAILEY seconded the motion, which was unanimously agreed to.

The CHAIRMAN thanked the meeting very sincerely for their kind vote of thanks, and proposed a vote of thanks to the scrutineers, for their kindness in investigating the results of the electoral ballot.

The motion was unanimously agreed to, and the proceedings terminated.

STATISTICS of the ABATEMENT in CRIME in ENGLAND and WALES,
during the TWENTY YEARS ended 1887-88.

By GEORGE GROSVENOR, ESQ.

[Read before the Royal Statistical Society, 22nd April, 1890.

FREDERICK HENDRIKS, Esq., F.I.A., a Vice-President, in the Chair.]

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PART I.

Introduction.

THE aim and purport of this paper is to show, in as reliable form as is possible, the extent of the abatement in crime in England and Wales during the last twenty years, *i.e.*, from 1869 to 1888, both in regard to the numbers simply, and in their comparison with the population. The figures relating to indictable proceedings are mainly relied on for this purpose, because those resulting from the charges dealt with summarily by justices, include so many offences

of a trifling character, scarcely in any sense to be considered as criminal. The numbers which appear in the following tables are extracted from the annual volumes of the "Judicial Statistics of England and Wales."

It may be stated briefly, by way of introduction to my subject, that the published information as to crime and criminals prior to the year 1857, was of a very limited character; it comprised the tables of criminal proceedings, and those statistics which were annually published in the reports of the inspectors of prisons. In the case of the former, they were complete and thoroughly reliable, but the latter related only to those offenders who passed through the local prisons, but did not include any particulars of the tens of thousands who were fined, and who, in the great majority of cases, did not become inmates of a prison. The tables of the criminal proceedings were compiled by the late Mr. Samuel Redgrave, from the annual returns made then, as now, to the Home Secretary. Mr. Redgrave, who for many years occupied the important post, in the Home Department, of Criminal Registrar, had the fullest opportunities of acquiring a thorough knowledge of the statistics of crime, he stated in his introduction to the tables for 1841, that, "the first annual record of the state of crime in England and Wales, as evidenced by the commitments for trial, was prepared in 1805, and from that time to the year 1841 there had been a progressive increase in the number committed." He further stated, "that until the peace in 1814, the increase was gradual, but commitments then increased so rapidly, that they were nearly doubled in three years. This position was maintained until 1821, when a slight decrease took place, and continued during the two following years, at the end of which an increase again commenced, and continued almost uninterruptedly for the ten succeeding years. The tables on the enlarged plan were then commenced, and the comparisons from that time being direct, the number of commitments annually were given." Those tables were ably arranged by Mr. Redgrave, and the calculations which accompanied them proved of the utmost value, because they afforded correct information upon the more important branch of the subject; the general statistics were, however, incomplete so far, that they comprised *only* those offenders who were *apprehended* and tried upon *indictment*; the large number of offences which were summarily dealt with were thus far left unrecorded, until the appointment of prison inspectors under the Act 5 and 6 Wm. IV, when the numbers of the several classified offences summarily disposed of, were first published.

It was in the year 1835 that inspectors of prisons were first appointed, but it was not until 1837 that the tables relating to the

summary offences—so far as the inmates of the local prisons were concerned—appeared in the inspector's reports, for they found at the very commencement of their duties, that their whole energies and attention were essential to the task of formulating rules for a uniform system of discipline for better controlling prisoners, because the great majority of the then existing local prisons throughout the kingdom, were in a most disorganised and utterly vicious condition. But even with these additional statistics of crime published in 1837, much was wanting to complete the information relating to known thieves, receivers of stolen goods, and suspected persons at large, as well as a knowledge of their identity and of the houses they frequented, information which has since developed into a correct annual census, as now given in the judicial statistics. Formerly occasional attempts were made to ascertain the number of the dangerous classes at large, but these were in reality only rough estimates, or mere guesses, on which no reliance could be placed. The long course of inquiries and the extended experience gained in the performance of these duties by the police since 1857, have enabled them to furnish correct particulars relating to this subject, which doubtless have proved of the utmost value to them in their efforts to cope with, and reduce the number of our criminals. Concurrent with the passing of the Counties and Boroughs Constabulary Act (19 and 20 Vict., cap. 69) in 1856, it was determined by the then Home Secretary, Sir George Grey, that a comprehensive statement of the statistics of justice should be collected and annually published. This task was entrusted to Mr. Samuel Redgrave, whose extended experience was utilised for that purpose. Full and proper returns relating to all courts of justice, both civil and criminal, as well as the fullest information in connection with the police of England and Wales, were, for the first time, obtained in 1857; and there can be but little, if any doubt, that Mr. Redgrave's unquestionable aptitude for the work secured the entire success of the duties so confided to him.

The records of the statistics of crime for the twenty years (1869-88 inclusive), as published in the "Judicial Statistics," will afford the information necessary to ascertain the results of the more recent measures for the detection and repression of crime, and the extent of the abatement therein; this I propose to consider under four separate divisions, viz.:—

- I. Police Statistics.
- II. Statistical Results of Trials upon Indictment.
- III. Prison Statistics.
- IV. Conclusion, suggesting probable Causes of the general Decrease in Crime.

I.—*Police Statistics.*

It is as well to state, that the statistics as set forth in this paper, have purposely been confined to those absolutely necessary to prove the fact of an abatement in crime, in the period of the twenty years chosen for that purpose:—

TABLE 1.—*Number and Cost of the Police in England and Wales in the undermentioned Years.*

Years.	Number of all Ranks of Constabulary and Police.	Total Cost.	Average Cost per Man each Year.	Number of Population to each Constable.
		£	£ s. d.	One constable to
1868-69	25,897	2,116,884	81 14 10	858·1 of the population
'72-73	28,550	2,567,491	89 18 7	819·9 "
'77-78	30,673	2,980,592	97 3 5	816·1 "
'82-83	34,488	3,367,678	97 12 11	776·2 "
'87-88	37,296	3,727,942	99 19 1	769·4 "

It will be observed that I have dealt with the numbers of each quinquennium only, starting with those of the first year, as a basis for affording a comparison between that and the last year of the series, rather than set out in full the figures for each of the twenty consecutive years. These figures exhibit a continuous increase in the numbers and cost of the police forces. In the strength, comparing the numbers in 1887-88 with those of the first year, there is an increase of 11,399 constables, or 44 per cent.; and with respect to the aggregate cost, an increase of 1,611,058*l.*, or 76·1 per cent.; augmenting the average annual cost per man from 81*l.* 14*s.* 10*d.* to 99*l.* 19*s.* 1*d.* The number of the police to the estimated population was in 1868-69, one constable to 858 of the population; and in 1887-88, one to 769; thus, rapid as may have been the increase in the population during the twenty years, the number of these forces has increased proportionately still more rapidly, and their efficiency has been no doubt thereby largely ensured.

At any rate, it may be averred that the more numerous and the more efficient the police forces are, the more successful will be their action in connection with the repression of crime; and here we may remark that "The Local Government Act, 1888," has, by Section 30, caused some forty of the smaller boroughs having a population under 10,000 each, to merge their police into that of their respective county forces, and when we remember that in the majority of the small boroughs but three or four men comprised the whole force, and some of these even only occupied partly in their duties as constables, it will be admitted that such a measure

must tend to increase the value and efficiency of the forces generally.

TABLE 2.—*Number of Depredators, Offenders, and Suspected Persons at Large in England and Wales (so far as known to the Police), in the Month of April, in each of the undermentioned Years.*

Years.	Known Thieves.			Receivers.			Suspected Persons.			Grand Total.	Grand Total to Population.
	Under 16 Years of Age.	16 Years and Above.	Total.	Under 16 Years of Age.	16 Years and Above.	Total.	Under 16 Years of Age.	16 Years and Above.	Total.		
-69	3,426	18,491	21,917	57	2,579	2,636	4,112	25,584	29,696	54,249	One in 409'6
-73	2,999	15,941	18,940	22	1,760	1,782	3,286	21,193	24,479	45,201	517'8
-78	2,803	15,109	17,912	10	1,408	1,418	2,870	18,426	21,296	40,626	616'1
-83	2,908	14,431	17,339	11	1,122	1,133	2,593	17,355	19,948	38,420	696'7
-88	2,512	12,235	14,747	3	1,118	1,121	2,292	14,750	17,042	32,910	871'9

The above figures comprise information of great value; they are obtained from the several police authorities by request of the Home Secretary, and the utmost care is taken that the numbers shall be carefully and correctly given; any marked variations observed from year to year are at once noted, and an explanation required. All previously known thieves who, prior to the immediate date of the returns, had for twelve months or upwards obtained a livelihood by honest means, have for the last twenty years been omitted from the returns. By these and other similar precautions, the statistics relating to criminals and suspected persons at large, have practically become as correct as they can possibly be made. In fact, the whole of the returns furnished by the police speak highly for the general intelligence and ability evinced in their preparation.

On comparing the figures under the above headings in each of the selected years, it will be palpable that a most decided and continuous *decrease* has taken place; and from the comparison with the population, it will be further evident that the decrease is of an entirely satisfactory character.

To give a clearer and better view of this decrease, I here give in a tabular form, the number of the population to each description of bad character for the two years 1868-69 and 1887-88.

Years.	Known Thieves.	Receivers.	Suspected Persons.	Total.
	One in	One in	One in	One in
-69	1,013 of population	8,430 of population	748 of population	409 of population
-88	1,945 "	25,599 "	1,683 "	871 "

The most striking feature in this last table is the extraordinary decrease shown in the number of receivers of stolen goods. There was one receiver in 1868-69 to 8,430 of the population; in 1887-88, one to 25,599; this decrease is indeed remarkable, and if its correctness were questioned, it would be easy to show its complete reliability by the figures of other tables; thus: the number of crimes of this class reported to the police in 1868-69 was 918; 1,037 persons were apprehended, 615 were committed for trial, and 445 convicted.

In 1887-88, 308 cases of receiving were reported; 365 persons apprehended, 280 committed for trial, and 250 convicted; these particulars will no doubt suffice to confirm the absolute correctness of the figures in the tables; any-way they point clearly to the successful action of the police. It is easy to understand, especially in large towns, that the promptitude of the police authorities in the apprehension of these pests of society, would have a most discouraging effect upon them, as well as upon all habitual criminals, who if unable to dispose of their plunder with promptitude and secrecy, must in a great measure be deterred from a continuance of their criminal career.

An additional and necessary action of a well organised body of police, more especially in large towns, is the duty of watching and periodically visiting houses of known or suspected bad character, the resort of thieves and depredators; and their frequent and unexpected visits for effecting apprehensions have doubtless been attended with results discouraging to criminals, and largely aided in the repression of crime, especially in the case of receivers of stolen goods. The total numbers of these houses, as given in the judicial statistics for each quinquennium in the period of the last twenty years, were as follows:—

TABLE 3.—*Number of Houses of Known or Suspected Bad Character in the undermentioned Years.*

Years.	Houses of Receivers of Stolen Goods.	Public-houses.	Beer-shops.	Coffee-shops.	Other Houses of Known or Suspected Bad Character.	Totals.	Proportion of Population to each Known or Suspected House of Bad Character.
1869....	1,962	1,921	1,930	346	2,584	8,743	One house to 2541·8 of popltn.
'73....	1,341	832	578	172	2,141	5,064	4622·5 "
'78....	1,082	472	349	101	2,436	4,440	5638·1 "
'83....	885	396	307	95	2,164	3,847	6958·1 "
'88....	778	380	277	96	1,447	2,978	9636·2 "

In reviewing these figures, it may be asked what is the cause of the sudden drop in the total number of these houses in 1873, when compared with those for the year 1868-69. In reply it may reasonably be assumed that the close and continued watchfulness

of the police over these houses, and the operation of the stringent penalties under the Licensing Acts, compelled many of the occupiers to mend their ways, and tended to discourage the assembling of bad characters on their premises; and further, it has been stated by the police, that their close attention to these questionable houses, especially public houses and beershops, compelled some of the owners to close their premises altogether; hence the large reduction in the numbers of such houses, viz., from 8,743 in 1869, to 5,064 in 1873; since which date the decrease has been continuous and regular. If we compare the figures with the estimated population in the first and last year of the series, we obtain the following results, viz., in 1868-69 the returns show one house of bad character to 2,541 of the estimated population, and in 1887-88, one to 9,636 of the population. The large reduction from year to year in the number of these houses in which thieves and other bad characters were wont to assemble, must have aided in an appreciable degree in the diminution of crime generally.

TABLE 4.—*Indictable Crimes Committed, as reported to the Police, with the Number and Result of the Apprehensions, in the undermentioned Years.*

Years.	Number of Crimes Committed as reported to the Police.	Number of Persons Apprehended.	Proportion of the Persons Apprehended to the Crimes Committed.	Disposal of the Persons Apprehended.			
				Number Discharged.	Proportion of Discharged to Number Apprehended.	Number Committed, or Bailed, for Trial.	Proportion Committed for Trial, to Number Apprehended.
1868-69	58,441	29,278	50·0	9,408	32·2	19,870	67·8
'72-73	45,214	22,377	49·4	6,903	30·9	15,474	69·1
'77-78	54,065	24,062	44·5	7,380	30·7	16,682	69·3
'82-83	49,534	20,450	41·2	5,335	26·1	15,115	73·9
'87-88	43,336	19,314	44·5	5,538	28·7	13,776	71·3

It will be seen from the above figures that the indictable crimes reported during the twenty years under review, have been reduced from 58,441 to 43,336, or 25·8 per cent.; that this is a correct record is presumable, from the almost continuous lowering of the numbers throughout the period, the variations being only the usual rise and fall, which is so frequently observable in the statistics of crime. It must however be admitted that the whole of this improvement is not entirely due to the diminution in crime, for in 1879 the Summary Jurisdiction Act was passed, giving extended powers to justices to deal with certain of the minor larcenies; and it is estimated that, at the outside, about 3,000 of such cases have been annually transferred under the Act to courts of summary jurisdiction. Adding this number (3,000)

to the figures given for 1887-88, there will still be a decrease as compared with 1868-69 of 12,105, or 20·7 per cent. Analysing the figures of Table 4, it is observable that the proportion of the *apprehensions* to the crimes committed, do not favour the assumption that the activity of the police in that respect continues unabated, for it will be seen that whilst the proportion in the first year was 50 per cent., in the last year it was but 44·5 per cent. But we find, that the proportions *committed for trial* to the numbers apprehended have a more encouraging aspect; in 1868-69 the proportion was 67·8 per cent., and in the last year 71·3 per cent. This at least must be considered satisfactory, as indicating that the criminal courts of first instance, in which the offenders were examined, were fully satisfied with the evidence submitted to them in the case of 71 out of every 100 brought before them, in the last named year. Further analysing the crimes reported to the police, we find, in some few instances, a slight, and in others a considerable increase; these I have treated separately in Table 5:—

TABLE 5.—*The following Table supplies the Number, under each Heading, of those Crimes, as reported to the Police, which show a decided or exceptional Increase.*

Years.	1 Murder.	2 Assaults with intent to Ravish and Abuse and Indecent Assaults.	3 Burglary and Housebreaking.	4 Breaking into Shops, Warehouses, &c.	5 Suicide, Attempting to Commit.
1868-69....	151	305	3,444	1,368	850
'72-73....	123	278	2,040	1,126	721
'77-78....	159	322	3,700	1,854	944
'82-83....	165	390	3,218	1,960	1,098
'87-88....	190	689	3,881	2,087	1,223

Col. 1. "Murder."—In reference to which it may be stated, that although an augmentation in the numbers for 1887-88, equal to 25 per cent., is seen, there is, in reality, but a trifling increase; because a considerable proportion of these crimes, *reported as* murder from verdicts given by coroners' juries, resolve themselves into the lesser offences of "manslaughter" and "concealment of birth." The mean number of the previous five years (1883-87) of those *found guilty of murder upon indictment* was 31, as against 36 in 1888.

Col. 2. "Assaults with intent to ravish, &c."—Here there is

an increase so large, that in comparing the numbers in 1887-88 with those of 1868-69, they show 125·9 per cent. as the extent of that increase; this is so extraordinary as to induce a further analysis of the entries, by which it is found that the apprehensions by the police in respect of the 689 offences in 1887-88, were 679; these were brought into court, examined, and 525 committed for trial, and subsequently tried, 329 of whom were found guilty. These offences have unquestionably largely increased of late years. I confess that it is difficult to assign any particular reason for so deplorable a fact. It does not appear that the maximum punishment is often imposed; it would not, however, I submit, be unreasonable to expect that heavier sentences might be sufficiently deterrent to meet crimes of this kind, or if not, then that our legislators, when the fact of this great increase is brought to their notice, may consider it desirable to give to judges larger powers, for the due punishment of such offenders.

Cols. 3 and 4. "Burglary and housebreaking" and "Breaking into shops, &c.," being kindred offences, are dealt with conjointly; they exhibit an increase of 1,156, or 24 per cent. This increase, to a great extent, owes its existence to the altered classification adopted by the metropolitan police in 1878, in reference to which an explanatory note appears on page 16 of the volume of the judicial statistics for that year to the following effect: "The Chief Commissioner of the metropolitan police district states, that a considerable proportion of the increase in the numbers of the cases of burglary and housebreaking, &c., is to be explained by the correction of the classification of offences, which was made in the autumn of 1877 (before the creation of the Criminal Investigation Department), various offences which had been entered as larcenies being from that date classified as burglaries, to which category they technically belong." This system has continued, hence the apparent large increase shown, as before stated.

Col. 5. "Suicide, attempting to commit."—These cases during the last three years of the series, display a marked increase in the numbers, which, comparing 1887-88 with 1868-69, exhibit an advance of 43·8 per cent. It is difficult to assign a reasonable cause for so large an increase, although I believe it has for some years past been asserted by those who have investigated this social problem, that the tendency to an increased number of attempts at suicide may be considered as almost inevitable.

TABLE 6.—*Number of Offences determined Summarily in the under-mentioned Years.*

Years.	Proceeded against.	Convicted.	Proportion Convicted.	Imprisoned.	Proportion of Imprisoned to Total Convicted.	Fined and other Punishments.	Proportion of Fined and other Punishment to Total Convicted.
			Per cent.		Per cent.		Per cent.
1868-69	517,875	372,707	71'9	95,263	25'6	277,444	74'4
'72-73	590,114	456,705	77'3	92,101	20'2	364,603	79'8
'77-78	676,773	538,232	79'5	106,891	19'9	431,341	80'1
'82-83	725,871	588,710	81'1	91,106	15'5	497,604	84'5
'87-88	668,558	538,930	80'6	78,438	14'6	460,492	85'4
Mean of } 5 years }	635,838	499,056	—	92,760	—	406,296	—

The increase in the total proceeded against summarily in 1887-88 as compared with 1868-69, was 29 per cent. This increase, fairly speaking, should be reduced by the newly created offences under the Elementary Education and Vaccination Acts, which were 79,470 in 1887-88; thus leaving the total number at 589,088, considerably under the mean of the five years, as given above. The proportion of the convicted to the number proceeded against in 1868-69 is 71'9 per cent.; and in 1887-88, 80'6 per cent.; a rise in the proportion in the last ten years, of 8'7 per cent.

The number sentenced to *Imprisonment* in 1868-69 was 95,263, or 25'6 per cent. of the total convicted; whilst in 1887-88 the imprisoned were reduced to 78,438, or only 14'6 per cent.; this number being more than 14,000 below the mean of the five selected years. Those upon whom a fine or other similar punishment was imposed increased from 277,444 in 1868-89, to 460,492, or from 74'4 per cent. of the convicted, to 85'4 per cent. in 1887-88; this is a clear indication that more than three-fourths of the offences were of a trifling, or anything but of a criminal character; this fact must certainly be of a reassuring nature. There are other of the minor offences, such as local Acts and borough bye-laws, which have more than doubled their number within the period to which the above table refers, from 25,433 in the first year, to 51,343 in the last, and although thereby assisting to swell the aggregate figures, they are in no wise offences of a criminal character.

With reference to the offence of drunkenness, the number proceeded against in 1868-69 was 122,310, and in 1887-88 166,366 these numbers exhibit a decided increase in the latter year, although if compared with the population in the first and last year of the series, the difference will be less pronounced, for in

1868-69 there was 1 person proceeded against for this offence to 181 of the population, and in the last year 1 to 172.

It should be stated by way of reminder that the numbers proceeded against for drunkenness do not represent so many distinct individuals, but the number of *cases*, in which the same person may have been charged with the offence many times in the year, and this repetition doubtless occurs in numerous cases of confirmed inebriates, who are known to be irreclaimable. I am aware that this hardly affects the argument in relation to the numbers, but at least it will help to modify in some degree what is unquestionably a blot upon the character of the English nation.

There are however in this table many disturbing elements to a fair and proper comparison of the numbers; especially so in the later years; but in order to assist in the full understanding of the points I have urged, I have given in the Appendix hereto (Tables A and B), tables of convictions, showing under each head of sentence the figures in detail for each of the twenty years, from 1868-69 to 1887-88 inclusive, with the mean numbers of each of the two decenniums. In comparing the figures of the two periods, it cannot fail to be observed that in spite of the continued increase in the totals, the proportion of the imprisonment sentences is a decreasing ratio throughout. In the year 1868-69, the basis of our comparison, 24·8 was the proportion; in 1872-73, 19·3; in 1877-78, 19·1; in 1882-83, 14·6; and in 1887-88 the proportion was only 13·4 per cent. In the "fined" and "other punishments" will be found largely increasing numbers; proving incontestably either that the justices in later years appear to be more placable and tender hearted in dealing with offenders, or that offences are more venial than formerly. It is the latter belief which will I think be more generally adopted.

PART II.

II.—*Results of Trials upon Indictment.*

The following tables relate exclusively to trials at assizes and quarter sessions; they comprise all indictable offences, some of which are only triable at assizes or at the central criminal court. It is the more important that our analysis or examination of the figures should be effected with the utmost care and completeness, for here we shall find both *increases* and *decreases*. Table 7, the first of the series, exhibits the whole number of persons committed for trial in each of the five years under review, together with the numbers convicted, and the proportion convicted, to the total committed, in each of the six classifications into which the offences are divided.

If we refer to Table 4 in Part I of this paper, we shall find in the last column but one, in the year 1888, that a total of 13,776 persons were committed, or bailed for trial, and in the table here following, that 13,750 persons were, in the same year, rendered in court for trial. The slight difference in the numbers arises, in part, from the fact that some of the few persons who were bailed for trial may not have surrendered, and also that the periods for which the two sets of returns are given are not identical, *e.g.*, the police figures are for the year ended 29th September, whilst the year relating to the trials is for that ending 31st December; the numbers, however, may be taken as practically representing the same offenders.

Table 7 is here followed by a set of six others, in which the figures are given in similar order to those in the Appendix, Table C. Dealing with the contents of Table 7, "Indictable Offences," it will be seen that the year 1888 was the lowest in point of total numbers, and if compared with the figures of 1869, will show a decrease of 28·8 per cent.; but if we allow, as before, 3,000 cases to have been deducted from larcenies, under the operation of the Summary Jurisdiction Act, 1879, and reinstate that number, we shall even then be able to see a decrease in the total of 2,568, or 13·2 per cent. There are, it may be pointed out, new indictable offences created under the Criminal Law Amendment Act, 1885, which have in the year 1888, added about 330 cases to the numbers; but these, as they now stand, have not been interfered with; they would, however, if excluded from the total, as they might justifiably be, augment the decrease to 15·4 per cent.; as they now stand, they are included adversely in the comparison for the year in question.

The accompanying table exhibits the total of each of the six classes into which the indictable crimes are divided, with the number of convictions in each class.

TABLE 7.—*Number of Persons Charged with Indictable Offences.*

Years	1 Offences against the Person.		2 Offences against Property with Violence.		3 Offences against Property with- out Violence.		4 Malicious Offences against Property.		5 Forgery and Offences against the Currency.		6 Other Offences not previously included.		7 Total.		P p ti C vic T N b P 7 7 7 7 7 7
	Tried.	Con- victed.	Tried.	Con- victed.	Tried.	Con- victed.	Tried.	Con- victed.	Tried.	Con- victed.	Tried.	Con- victed.	Tried.	Con- victed.	
1869	2,396	1,599	2,155	1,735	13,091	9,802	382	215	606	516	688	473	19,318	14,340	P
'73	2,011	1,347	1,233	952	10,516	7,968	161	81	379	327	593	414	14,893	11,089	7
'78	2,347	1,650	1,637	1,307	10,767	8,306	255	150	477	402	889	658	16,372	12,473	7
'83	2,319	1,589	1,819	1,484	8,817	7,015	301	197	493	406	910	656	14,659	11,347	7
'88	2,784	1,789	2,180	1,839	7,401	5,914	261	180	405	329	719	510	13,750	10,561	7

Reviewing the numbers in the foregoing table, we find in the case of—

1. "Offences against the person," that there is an increase of 388, or 16·1 per cent., in 1888, comparing that year with the numbers in 1869. (N.B. In the year 1888 there were 330 new offences under "The Criminal Law Amendment Act, 1885.")

2. In the class "Offences against property with violence," there is a trifling increase equal to 1·1 per cent.

3. In "Offences against property without violence," there is a large abatement equal to 5,690, or 43·4 per cent. Here it is proper to remark that the large reduction under this heading is in part due to the operation of the Summary Jurisdiction Act, 1879, before referred to; nevertheless the figures in this division must be held to be satisfactory, inasmuch as without the deduction just referred to, there would still be a considerable decrease, equal to 20 per cent.

4. "Malicious offences against property;" a considerable reduction in the figures is evident, for in 1869 there were 382 persons rendered for trial; but in 1888 there were only 261, a decrease of 31·6 per cent.

5. "Forgery and offences against the currency;" the numbers in 1888 when compared with those of 1869 show a falling off of 201, or 33·1 per cent.

6. "Other offences not previously included," show a slight increase in 1888 of 4·5 per cent., which is due to increased attempts at suicide.

Tested by the *total* of all the classes, the figures show a very favourable result; thus in comparing the numbers for 1888 with those of 1869, we find there was a decrease in 1888 of 5,568, or 28·8 per cent.; but if in 1888 we replace the numbers, or an approximation thereto, of those removed by the operation of the Summary Jurisdiction Act, 1879, from indictable offences, or rather such as would have appeared in the above table, if such Act had not passed, say 3,000, we should then obtain a total of 16,750, which latter, if compared with those numbers given for 1869, will still leave a decrease in 1888 of 2,568, or 13·2 per cent.; but if we measure the amended numbers for 1888, and those for 1869 each with the population in the respective years, we shall see that in 1869, there was *one* person tried to 1,149 of the population, and in 1888 one to 1,713 of the population. The proportions of the convicted to the total tried in each of the selected years, as shown in the table, offer as well, results of a most satisfactory character, rising as they do in a slow but a continuous manner, from 74·2 per cent. in 1869, to 76·8 in 1888.

TABLE 8.—ENGLAND AND WALES. *Indictable Offences, Class 1.—Offences against the Person. Number of Persons Committed, or Bailed, for Trial, in each of the undermentioned Years.*

Offences, of which those Tried were Convicted or Acquitted, and of which those Discharged without Trial were Charged on Indictment or Commitment.	1888.	1883.	1878.	1873.	1869.	Mean Number of the 5 Years.
<i>No. 1. Offences against the Person.</i>						
Murder	90	53	59	59	63	64
Attempts to murder	30	28	48	20	52	35
Shooting at, stabbing, wounding, &c., with intent to main, do bodily harm, &c.	44	89	150	155	148	117
Manslaughter	157	234	224	255	216	217
Attempts to procure the miscarriage of women	17	15	11	14	5	12
Concealing the births of infants	76	63	83	99	123	88
Sodomy and bestiality	37	34	42	23	45	36
„ assaults with intent to commit, and other unnatural misdemeanours	62	74	67	62	74	67
Rape	133	165	140	132	149	143
Assaults with intent to ravish, and indecent assaults	533	411	317	249	311	364
Defilement of girls under the age of 13, and attempts ditto (sec. 4, Criminal Law Amendment Act, 1885)	155	10	9	—	—	—
Defilement of girls between 13 and 16, and attempts ditto (sec. 5, ditto)	137	—	—	—	—	—
Householder permitting defilement of girls under 13 (sec. 6, ditto)	4	—	—	—	—	—
Householder permitting defilement of girls between 13 and 16 years of age (sec. 6, ditto)	7	—	—	—	—	—
Procuration, &c. (secs. 2, 3, and 8, ditto)	7	—	—	—	—	—
Abduction of girls under 18 (sec. 7, ditto)	15	—	—	—	—	—
„ (sec. 53, 24 and 25 Vict., cap. 100)	—	16	—	—	—	—
Forcible abduction (sec. 54, ditto)	—	—	—	—	—	—
Abduction of girls under 16 years of age (sec. 55, ditto)	6	—	5	6	4	4
Bigamy	80	111	82	98	85	91
Child stealing	7	5	1	4	6	4
Unlawfully abandoning children under 2 years of age	8	8	12	13	10	10
Endangering the safety of passengers on railways	26	8	13	32	33	22
Assault and inflicting bodily harm	905	762	819	585	628	739
Assaults (common)	204	173	207	153	249	197
„ on peace officers in the execution of their duty	44	60	58	52	195	81
Totals of Class 1	2,784	2,319	2,347	2,011	2,396	2,371

Analysing the numbers given in the above table, we find that there is an increase therein in respect of certain of the offences.

The number of persons committed for trial for murder, show an increase in the last year, when compared with the numbers for

1869, equal to 42·8 per cent., but this increase is in reality only apparent, as mentioned in the earlier portion of this paper; a large proportion of the number “resolve themselves into the lesser ‘crimes of ‘manslaughter,’ and ‘concealment of birth;’” but taking the numbers as they stand, and comparing 1888 with the mean of the five years, an increase of 40 per cent. results.

“Assaults with intent to ravish, and indecent assaults,” exhibit a considerable augmentation in 1888, equal to 222 or 71·3 per cent.; however, comparing that year with the mean numbers for the five years, an increase is shown of 46·4 per cent.

With reference to the augmentation in the numbers committed for trial for “assault and inflicting bodily harm,” it is to be noted that the increase amounts to 44·1 per cent., whilst “common assaults” have increased by 3·5 per cent. in the year 1888, as compared with the mean numbers of the five years.

The remainder of the offences set out in this table, with but very trifling exceptions, are decreases, some of a notable character, such as “attempts to murder,” “shooting at, wounding with intent to maim, &c,” and “assaults on peace officers, &c.,” which last appear, year by year, gradually to have diminished in number, both in respect of those offences summarily disposed of, as well as of those tried upon indictment.

TABLE 9.—ENGLAND AND WALES. *Indictable Offences, Class 2.—Offences against Property with Violence. Number of Persons Committed, or Bailed, for Trial, in each of the undermentioned Years.*

Offences, of which those Tried were Convicted or Acquitted, and of which those Discharged without Trial were Charged on Indictment or Commitment.	1888.	1883.	1878.	1873.	1869.	Mean of the 5 Years.
<i>No. 2. Offences against Property with Violence.</i>						
Sacrilege	29	11	12	14	26	18
Burglary	532	443	324	241	550	418
Housebreaking	560	526	453	425	704	533
Breaking within the curtilage of dwelling houses, and stealing	19	46	37	22	49	34
Breaking into shops, warehouses, and counting houses, and stealing	570	393	423	209	297	378
Misdemeanours with intent to commit the above offences	93	70	46	26	44	55
Robbery, and assaults to rob, by persons armed in company, &c.	326	280	278	255	421	312
Obtaining property by threats to accuse of unnatural crimes	—	1	—	—	1	—
Assaults with intent to rob, and demanding property with menaces	47	41	58	33	59	47
Stealing in dwelling houses, persons therein being put in fear	3	—	—	—	—	—
Sending menacing letters to extort money	1	8	6	4	4	4
Piracy	—	—	—	4	—	—
Totals of Class 2	2,180	1,819	1,637	1,233	2,155	1,804

Offences against Property with Violence.—The only offences which show a marked variation in the above table are first, charges of burglary and housebreaking, the numbers of which, for 1888, if compared with those of 1869, show a *decrease* of 12·9 per cent.; but if compared with the mean of the five years, an *increase* equal to 14·8 per cent. is seen.

The total numbers of this class for the respective years 1888, and 1869, show an *increase* against the former year of 25, or 1·1 per cent.; but if the numbers for 1888 are compared with the mean of the five years, an increase of 20 per cent. is the result.

“Breaking into shops and warehouses, &c.,” exhibit, in 1888, compared with the mean numbers for the five years, an *increase* of 30·7 per cent.

TABLE 10.—ENGLAND AND WALES. *Indictable Offences, Class 3.—Offences against Property without Violence. Number of Persons Committed or Bailed, for Trial, in each of the undermentioned Years.*

Offences, of which those Tried were Convicted or Acquitted, and of which those Discharged without Trial were Charged on Indictment or Commitment.	1888.	1883.	1878.	1873.	1869.	Mean of the 5 Years.
<i>No. 3. Offences against Property without Violence.</i>						
Cattle stealing	17	16	20	13	19	17
Horse „	145	101	125	94	145	122
Sheep „	59	48	59	59	106	66
Larceny to the value of 5 <i>l.</i> in dwelling houses }	179	238	268	220	289	240
Larceny from the person	875	1,137	1,291	1,206	1,636	1,229
„ by servants	286	402	712	940	953	658
„ simple	4,048	4,924	6,229	6,192	7,574	5,793
Stealing from vessels in port, on a river, &c. }	46	102	102	108	103	92
Stealing goods in process of manufacture	—	—	—	—	10	2
Stealing fixtures, trees, and shrubs growing, &c. }	75	64	98	76	227	108
Misdemeanours with intent to steal	81	5	68	51	51	51
Embezzlement	152	215	301	271	334	254
Stealing and receiving letters stolen from the post office by servants }	78	58	44	34	28	48
Receiving stolen goods	308	358	480	445	607	439
Frauds and attempts to defraud	1,052	1,149	970	807	1,009	997
Totals of Class 3	7,401	8,817	10,767	10,516	13,091	10,118

In the offences as given in the foregoing table we observe a considerable abatement in the numbers *committed* or bailed for trial; this abatement is equal, comparing the numbers for 1888 with the mean of the five years, to 26·8 per cent.; it is however proper here to remark that this diminution in the numbers is in part due to the operation of the Summary Jurisdiction Act, 1879, before referred to; nevertheless, the figures in this division of the indict-

able offences must be held to be satisfactory, inasmuch as the 1888 numbers, if compared with those of twenty years earlier (1869) exhibit the large reduction of 5,690, or 43·4 per cent. On looking down the list of offences, and comparing each with the mean number in this table, it will be seen that, with the exception of some two or three offences, the numbers for the latest year (1888), show a very encouraging result; one of the exceptions referred to is, that of "Stealing letters from the post office by "servants," which offence has increased from 48 cases, the mean of the several years, to 78 in the year 1888; but when we remember that in the twenty years comprised in the table, the letters passing through the post office have augmented from 688 millions to 1,287 millions, and the consequent increase in the numbers of persons employed in the post office, it is to be expected that some increase would be almost certain to appear in this offence; that it is gradual is shown by the numbers for several years, viz., from 28 in 1869, to 34, 44, 58, and then to 78 respectively. The most striking variation is to be found in the numbers committed for trial for "Receiving stolen goods," which have abated to an extraordinary extent, from 607 in 1869, to 308 in 1888, closely approaching to one-half the numbers in the year 1869. This fact is substantiated by the previous figures given by the police in the first part of this paper. With reference to the totals of this class, the diminution in 1888 is remarkable in its extent when compared with 1869, showing an abatement of 43·4 per cent., and if compared with the mean numbers for the five years, a decrease of 26·8 per cent.

TABLE 11.—ENGLAND AND WALES. *Indictable Offences, Class 4.—Malicious Offences against Property. Number of Persons Committed, or Bailed, for Trial, in each of the undermentioned Years.*

Offences, of which those Tried were Convicted or Acquitted, and of which those Discharged without Trial, were Charged on Indictment or Commitment.	1888.	1883.	1878.	1873.	1869.	Mean of the 5 Years
<i>No. 4. Malicious Offences against Property.</i>						
Setting fire to a dwelling house or shop, persons being therein	1	3	4	2	2	2
Setting fire to a house, warehouse, corn stack, &c.	117	151	92	91	205	131
„ crops, plantations, heath, &c.....	8	13	21	1	6	9
Attempts to commit arson, set fire to crops, &c....	7	15	3	5	7	7
Riot, and feloniously demolishing buildings, machinery, &c.	—	2	31	—	74	21
Destroying silk, woollen, &c., goods in process of manufacture.....	—	1	—	1	—	—
Destroying hop-binds, trees, and shrubs growing, &c.	4	11	2	11	3	6
Killing and maiming cattle	7	7	8	14	18	10
Sending letters threatening to burn houses, &c.	—	—	—	—	—	—
Malicious injuries to property exceeding 5 <i>l.</i> in value	64	39	63	19	19	40
Other malicious offences	53	59	31	17	48	41
Totals of Class 4	261	301	255	161	382	272

No. 4. "Malicious offences against property."—There are but the two offences in this table, viz., "malicious injuries to property" "exceeding 5*l.* in value," and "other malicious offences," in which any increase occurs; and even this may be considered to result more from the usual fluctuations in the statistics of crime, than from any permanent enlargement of the number of these two particular offences; the increase here shown in 1888, taking the two offences together, as against the mean of the five years, is 30·7 per cent.; the number in every offence in this class is low, and the total for 1888 is but 261, of which 180 were convicted.

The total numbers for 1888 compared with those for 1869 exhibit a decrease of 31·6 per cent., and with the mean of the five years 4 per cent.

TABLE 12.—ENGLAND AND WALES. *Indictable Offences, Class 5.—Forgery and Offences against the Currency. Number of Persons Committed, or Bailed, for Trial, in each of the undermentioned Years.*

Offences, of which those Tried were Convicted or Acquitted, and of which those Discharged without Trial, were Charged on Indictment or Commitment.	1888.	1883.	1878.	1873.	1869.	Mean of the 5 Years.
<i>No. 5. Forgery and Offences against the Currency.</i>						
Forging and uttering forged Bank of England notes	—	—	—	—	—	—
Forging and uttering other forged instruments	209	221	244	157	185	203
Having in possession, &c., forged Bank of England notes	—	—	1	—	—	—
Counterfeiting the current gold and silver coin	—	2	6	1	2	2
Having in possession, &c., implements for coining	12	4	24	9	18	13
Buying and putting off counterfeit gold and silver coin	—	1	—	1	—	—
Uttering and having in possession ditto....	184	265	202	211	401	252
Totals of Class 5	405	493	477	379	606	472

"Forgery and offences against the currency."—These exhibit a decrease throughout. Of the 405 offenders put upon their trial, 329 were convicted. The decrease shown in the total for 1888 compared with the mean of the five years equals 14·1 per cent.

There were but 3 of these offences against which committals were made in 1888, with the exception of "forgery and uttering of "forged instruments," which in 1888 shows a *slight* increase, the others exhibit a decided decrease, equal in the case of uttering counterfeit coins to 54·1 per cent., and as compared with the mean numbers of the five years to 27 per cent.

TABLE 13.—ENGLAND AND WALES. *Indictable Offences, Class 6.—Other Offences not included in the previous Five Classes. Number of Persons Committed, or Bailed, for Trial, in each of the undermentioned Years.*

Offences, of which those Tried were Convicted or Acquitted, and of which those Discharged without Trial, were Charged on Indictment or Comaimitment.	1888.	1883.	1878.	1873.	1869.	Mean of the 5 Years.
No. 6. <i>Other Offences not included in the above Classes.</i>						
High treason and feloniously com- passing to levy war	—	—	—	—	—	—
Treason felony	—	12	—	—	—	2
Assembling armed, &c., to aid smugglers	—	—	—	—	—	—
Assaulting, &c., officers employed to prevent smuggling	—	—	—	—	—	—
Deer stealing, and feloniously resisting deer keepers	—	—	—	—	—	—
Being out armed, taking game, and assaulting gamekeepers	100	89	91	56	103	87
Taking and destroying fish in enclosed water	11	20	—	3	6	8
Being at large under sentence of transportation or penal servitude	—	—	1	2	5	1
Prison breaking, harbouring and aiding the escape of felons.....	1	1	5	10	4	4
Perjury and subornation of perjury	74	96	71	88	86	83
Riot, sedition, &c.	—	—	—	—	—	—
„ breach of the peace, and pound-breach	23	46	148	25	183	85
Rescue, and refusing to aid peace officers	1	—	6	3	1	2
Keeping disorderly houses	19	95	105	76	32	65
Indecently exposing the person.....	12	13	4	8	8	9
Offences under the Bankruptcy Acts, 1869 and 1883, and the Act for the Abolition of Im- prisonment for Debt, 1869.....	44	52	67	24	41	45
Suicide, attempting to commit	169	111	71	34	40	85
Felonies not included in the above denominations	13	59	81	62	27	48
Misdemeanours ditto	252	316	239	202	152	232
Totals of Class 6	719	910	889	593	688	759
Grand totals of the six classes	13,750	14,659	16,372	14,893	19,318	15,798

In the “Other offences,” as given above, there is no material increase, with but the exception of “Suicide, attempting to commit,” which offence has been increasing during the whole of the years comprised in the table, the numbers for 1888 compared with those of 1869, for this particular offence, exhibit the large increase of 322·5 per cent., and as compared with the mean of the five years, of 98·8 per cent. The *total* numbers of this class of

offences, No. 6, however, show the slight augmentation of 4·5 per cent. only; by a similar comparison in the numbers of 1888 with the mean, the *decrease* is equal to 5·2 per cent. The grand total of the six sections, or, in other words, the grand total of the persons who were committed or bailed for trial, furnish a very favourable result; thus the numbers for 1888, compared with those of 1869, exhibit a *decrease* in the former year of 28·8 per cent.; but if we replace the numbers, or an approximation thereto, of those removed by the operation of the Summary Jurisdiction Act, 1879, from indictable offences, or such as would have remained if that Act had not passed, say 3,000, we should then obtain a total of 16,750, which latter, if compared with those in 1869, will still leave a *decrease* in favour of 1888 of 13·2 per cent., and further, comparing 1888 figures with those of the mean of the five years as given in the above table, an increase of 6 per cent. is shown. As already stated, there are, in the total in question, in 1888, 330 new offences created under the “Criminal Law Amendment Act, 1885.” If we measure the amended numbers for 1888 and 1869 respectively with the estimated population of those years, we shall find that there was, in 1869, one person charged with an indictable offence to 1,150 of the population, and in 1888 one person to 1,713 of the population. This analysis and the comparisons are certainly most encouraging with respect to the more serious offences given throughout these tables.

TABLE 14.—*Showing the Number of Persons Indicted and Tried for Crimes in which a MARKED Increase appears in the Year 1888.*

Year.	1 Murder.	2 Assaults with intent to Ravish, and Indecent Assaults.	3 Burglary and Housebreaking.	4 Breaking into Shops, &c.	5 Suicide, Attempting to Commit.
1869	63	311	1,254	297	40
'73	59	249	666	209	34
'78	59	317	777	423	71
'83	53	411	969	393	111
'88	99	533	1,092	570	169

Col. 1. “Murder.”—There is an increase, compared with 1869, of 27, or 42·8 per cent.

Col. 2. “Assaults, with intent to ravish, and indecent “assaults.”—In this class of offence the numbers for 1888, when compared with those for 1869, indicate an increase of 222, or 71·3 per cent. The increase appears to have been continuous since 1873; it is large, and of sufficient importance to create a desire to learn, if possible, the cause. It is seen, on examination of the localities in which these offences were committed, that they are tolerably evenly

distributed: the metropolis answers for rather more than about one-fourth of the total; whilst Lancashire, Cheshire, Yorkshire, Worcester, Devon, Durham, Stafford, and Southampton counties, include about one-third of the whole of the cases; the remainder having occurred pretty uniformly in point of numbers in all the remaining counties, with the exception of two English and five Welsh counties. Perhaps the imposition of adequately severe sentences upon such offenders, as suggested in a previous portion of this paper, might probably in some degree check the increase.

Col. 3. In regard to the offences of "Burglary and house breaking," an increase is observable in the numbers for the last year compared with the three last preceding years; but this, as before stated, is, to a considerable extent, due to the altered classification, and to the increase of professional burglars, from which, to some extent, this increase would arise. It is well known that two or more persons of late years have been usually associated in burglaries, who, when arrested and committed for trial, would each, in court, count as the perpetrator of one crime; *e.g.*, in analysing the 146 burglaries for which persons were indicted at the Central Criminal Court in 1888, it was found that 95 were each committed by *one* person, 39 by *two* persons together in each case, 7 by *three* persons conjointly, 3 by *four* persons, and 2 by *five* persons in each case; thus these 146 cases would show as 216 persons, counting in the table of persons tried as 216 burglaries, instead of only 146, an increase equal to 47·9 per cent. in the normal number of these offences.

Col. 4. "Breaking into shops, &c."—An increase in 1888 is observable in these offences, equal, as compared with the figures of 1869, to 273, or 91·9 per cent.; and comparing 1888 with the mean of the five years, there is an increase of 192, or 50·8 per cent.

Col. 5. "Suicide, attempting to commit."—These, more especially in the two last years, have shown largely increased numbers, for which it is difficult to assign any reliable cause, so many and such varying circumstances aiding to produce that peculiarly depressed state of mind which invariably accompanies the attempt at suicide. That the numbers have largely increased during the past few years is palpably evident. Of the 169 persons rendered in court for trial in 1888, 4 were found insane, 119 were convicted; of these 40 were fined or discharged in sureties; 55 received sentences of imprisonment, varying from one month to a few days; and 24 were sentenced to imprisonment for periods from one to twelve months.

The numbers in the columns as above enumerated in Table 14, constitute, in effect, the only crimes among the 13,750 which are shown to have increased to any notable extent.

The Tables A to E in the Appendix.

The tables in the Appendix marked A and B relate to the sentences passed by courts of *summary jurisdiction* in each of the twenty years from 1869 to 1888, inclusive. For convenience the period has been divided into two decenniums, the mean numbers being given in each case; those for the first and second periods are contrasted, affording a ready comparison between the two decades, which on mere inspection will furnish ample proof of the improvement in the sentences, and an abatement in the total of the more serious offences. It should however be remembered that certain new offences have been imported into the table, which unfairly affect the comparison in the figures in the last ten years. In comparing the mean numbers of each of the years, it will be observable that the sentences of imprisonment above six months have been reduced from an average of 120 per annum in the first decade, to 86 in the latter; whilst in those sentences of imprisonment under the several headings from six months to one month and above fourteen days, a considerable decrease in the numbers is evident. In the "fourteen days and under" column, there is a slight increase; but the total sentences of imprisonment show a marked diminution: the mean for the first decade, 1869 to 1878, being 92,128, and those for the second decade 86,272, an abatement of 5,856, or 6·3 per cent. The "fined" and "other punishments" columns together, however, exhibit a considerable increase, as indicating that the bulk of the offences disposed of summarily were of a trivial character. The "*total*" figures in each decade are given in the tables. In the last ten years an increase is seen, this is attributable to new offences created under the Elementary Education and Vaccination Acts, which amounted in all to 79,470.

Table C in Appendix, exhibits the numbers as against each *indictable* offence in the five years therein stated, with the totals for each of the six distinct classifications, and for the grand totals; from which it will be easy to trace the increase or decrease in the figures relating to the several crimes. As these have previously been analysed and otherwise dealt with (Part II), it is unnecessary again to go into the details, but we may just glance at the total of each of the five years therein shown. It will be observed that of the five grand totals, that for 1888 is the lowest by nearly 1,000; but comparing the number for 1888 with that which is shown for 1869, a much larger decrease is manifest.

The two tables in the Appendix marked D and E, relating to Part II, it may be proper to point out, comprise the *sentences* imposed upon all criminals convicted upon indictment in each of

the twenty years under review; for convenience they have been arranged in two decades; the mean numbers are given for each decade, and a comparison made therewith. Should the slightest doubt exist as to the general abatement in crime, an inspection of the numbers in these tables will, I feel sure, remove such doubt, and make the fact clear. It may be asserted that the results shown by these means point conclusively to such a general decrease, both in respect of the figures and of the sentences imposed, as to awaken some surprise in regard to the latter with respect to their low average length; for it appears that in the first of the twenty years, viz., 1869, there were 2,006 penal servitude sentences recorded; whilst in 1888 there were but 924, or a diminution of 53·9 per cent.; the proportion of these sentences to the number convicted in 1869 was 13·9 per cent., and in 1888 only 8·7 per cent. In addition it will be noted that the more *lenient* sentences of imprisonment, those for three months and under, were proportionately more numerous in the last than in the first of the twenty years; for in 1869 they were 27·4 per cent. of the total, and in 1888 32·3 per cent. If we compare the mean numbers in each of the two decades, we shall observe that in the first the mean of the penal servitude sentences was 1,678, and in the second 1,245, a decrease upon this basis of 25·8 per cent. The mean imprisonment sentences dealt with in like manner show an abatement in the second half of the table of 5·6 per cent.; and further, comparing the mean total convictions in each decade, the latter decade is seen to exhibit a decrease equal to 7·4 per cent. Lastly, if we measure the numbers with the population, we find that in 1869 there was 1 sentence of penal servitude to 11,078; in 1888 there was 1 such sentence to 31,056 of the population. With reference to the terms of imprisonment a similar improvement is observable, although not to such a striking extent; in short, in the great majority of these sentences a remarkable falling off in their numbers and severity is evident. Any further test with regard to this point is, I think, unnecessary, for the tables and numbers bear on their face evidence sufficient to convince the most doubting, that the general abatement in crime is incontrovertible.

PART III.

III.—*Prison Statistics.*

This division of the subject relates exclusively to the local prisons, and will complete the series of the *numbers* extracted from the “Judicial Statistics of England and Wales.”

The local prisons since the passing of “The Prisons Act, 1877,” have been greatly reduced in number, under the powers conferred

by the Act, and with the approval of the Home Secretary, by the closing of 54 out of the 113 prisons which existed in 1877; and this has been effected at a considerable saving in the cost of service. The number of the committals given in these tables are exclusive of debtors, and naval and military prisoners.

TABLE 15.—*Showing the Committals to the Local Prisons in the undermentioned Years.*

Years.	1 For Trial and on Conviction, not previously in Custody.	2 Summary Con- victions.	3 For want of Sureties.	4 Remanded and Discharged.	5 Total.	Proportion of Population to each Prisoner.
						One to
1868-69	19,122	123,552	3,095	11,485	157,254	141·3 of population
'72-73	14,683	126,437	3,044	11,249	155,413	150·6 "
'77-78	15,391	143,325	3,125	10,812	172,653	144·9 "
'82-83	13,827	151,056	2,253	10,378	177,514	150·8 "
'87-88	12,247	144,765	2,160	11,148	170,320	168·4 "

In the first column in the above table we see the diminishing numbers as in former tables, relating as they do to those persons committed for trial or tried at assizes and quarter sessions; they range from 19,122 in 1869, to 12,247 in 1888, a very considerable difference, it must be admitted. In Col. 2 we find, as was to be expected, an increase from 123,552 in the first year, to 144,765 in the last; these figures by themselves show an undoubted increase, but it cannot fairly be treated as an increase in *crime*; for taking the year 1888 for example, although 538,930 persons were convicted of offences (see Part I, Table 6), no less than 460,492, or 85·4 per cent., were punished by *fines*; and the remainder, or 14·6 per cent. only, imprisoned, clearly indicating that 85 out of every 100 of these cases were of a trivial character; besides, as stated in the earlier portion of this paper, proceedings had been initiated for new offences, in the later of the twenty years, under the Elementary Education and Vaccination Acts, in which 68,858 *convictions* followed in 1888, all of which were punished by *fines*, with the exception of 89 persons, who were imprisoned for short terms not exceeding one month. Now if the figures in Col. 2 are measured by the population, we shall find that in 1869 there was one criminal committal to 141·3 of the population, and in 1888 one to 168·4, showing a decided decrease, even inclusive of the numbers of the new offences before adverted to. Col. 3. The committals for want of sureties exhibit a steady decrease, equal to 30·2 per cent.; and Col. 4, relating to remanded and discharged prisoners,

remain with but little, if any, variation, agreeing in all respects with the analysis of the preceding tables.

There are two other points in reference to the inmates of the local prisons on which further information may profitably be given. (1.) A statement of the *birthplace* of those committed to prison for offences, with the centesimal proportions in each of the five selected years; and (2) a table of the *Degree of Instruction* of the prisoners, with the like proportions under each heading of the tables.

TABLE 16.—*Showing the Birthplace of those Committed to Local Prisons, and the Proportions to Totals.*

Birthplace.	1887-88.		1882-83.		1877-78.		1872-73.		1868-69.	
	Numbers.	Pro- portion to Total.	Numbers.	Pro- portion to Total.	Numbers.	Pro- portion to Total.	Numbers.	Pro- portion to Total.	Numbers.	Pro- portion to Total.
land	139,919	82·1	144,215	81·5	136,993	79·3	122,282	78·7	123,597	78·7
es	4,905	2·9	5,382	3·0	5,392	3·1	4,129	2·7	4,175	2·6
land	3,240	1·9	3,957	2·2	3,969	2·3	3,476	2·3	3,145	2·0
land	18,703	11·0	20,232	11·4	22,593	13·1	22,100	14·2	22,882	14·6
inies and East dies	843	0·5	783	0·4	666	0·4	671	0·4	667	0·4
ign countries	2,161	1·3	2,288	1·2	2,215	1·3	2,104	1·4	2,247	1·4
ascertained	549	0·3	657	0·3	825	0·5	651	0·3	541	0·3

From an inspection of this table it is manifest that the only variations in the proportions to the *total* worthy of notice, are those relating to the English and Irish numbers. In the English, the *increase* in the proportion has risen from 78·7 to 82·1 per cent. In the Irish the *decrease* is larger proportionately, ranging from 14·6 to 11·0 per cent. in 1888. This is certainly so far promising for the “distressful country.” I do not think it will be disputed from the numbers and proportions given in this table, that the Irish people resident here, have shown themselves capable of restraining their possible tendencies to lawlessness, which to a great extent is engendered by the surroundings of many of the Irish poorer classes. It certainly may be questioned whether the information disclosed by the figures, and calculations given above, are essential to the object for which this paper has been written, viz., to prove the abatement in crime, but at least it offers certain reliable facts, which all who read will doubtless appreciate.

TABLE 17.—*Showing the Degree of Instruction and Proportion per Cent. of those Committed to the Local Prisons.*

Degree of Instruction.	1887-88.		1882-83.		1877-78.		1872-73.		1868-69.	
	Numbers.	Proportion to Total.	Numbers.	Proportion to Total.	Numbers.	Proportion to Total.	Numbers.	Proportion to Total.	Numbers.	Proportion to Total.
Neither read nor write	43,310	25'4	55,054	31'0	56,975	33'0	51,898	33'4	54,951	33'4
Read, or read and write imperfectly	123,060	72'2	116,101	65'4	109,469	63'4	98,112	63'1	96,270	63'1
Read and write well	3,677	2'2	5,421	3'1	5,529	3'2	4,649	3'0	4,782	3'0
Superior instruction	117	0'1	210	0'1	185	0'1	200	0'1	227	0'1
Instruction not ascertained	156	0'1	728	0'4	495	0'3	554	0'4	1,024	0'6

The facts disclosed by the foregoing table appear to be satisfactory in so far that those who could neither read nor write in 1868-69 were 35 per cent. of the *total committals*; whilst in the last year of the series the proportion had fallen to 25'4 per cent., an appreciable reduction under this head. Those who could read, or read and write imperfectly, had risen from 61'2 per cent. to 72'2 per cent. in the twenty years. The number who could read and write well who became inmates of the prisons, is fewer than heretofore. This decrease appears to be a desirable amendment, as showing a smaller proportion of those who had sufficient education and intelligence to be aware of, and desirous to avoid, the penalties attaching to crime. The remainder, as seen by the table, appear to be stationary, with the exception of the number of those whose state of instruction could not be ascertained, which is now a mere vanishing fraction.

TABLE 18.—*Exhibiting the Number of Criminals, &c., at Large, in Prisons, and in Reformatory Schools, in each of the undermentioned Years.*

Years.	Criminal Classes at large (known Thieves, Depredators, and Suspected Persons).	In Local Prisons, exclusive of Debtors and Military Prisoners, at end of the Year.	In Convict Prisons at end of the Year.	In Reformatory Schools at end of the Year.	Total.	Proportion of the Population to each Criminal.
1868-69	54,249	19,927	8,864	4,318	87,358	One criminal to 254'3 of population
'72-73	45,201	17,511	9,582	4,515	76,809	304'3
'77-78	40,626	17,625	10,358	4,883	73,492	340'6
'82-83	38,420	16,751	9,640	4,517	69,328	386'1
'87-88	32,910	13,973	5,583	4,203	56,669	506'3

This last table is given to afford further evidence of the unmistakable abatement in the number of criminals, (the majority

of whom are habitual offenders, well known to the police,) in respect both of those actually under confinement, and of those offenders who were at large in the second week in April in each year, when the numbers are usually taken by the police. From these figures it will be evident that there is a considerable falling off each year throughout, and that the decrease in the total numbers in 1888, as compared with those of 1869, is equal to 30,689, or 35·1 per cent., and when compared with the population in the first and last year of the series, a still greater diminution is observable, for whereas in 1869 there was of the total numbers 1 criminal to 254·3 of the population; in 1888 there was 1 to 506·3 of the population. These results are sufficiently convincing to render it unnecessary to comment further upon their extremely satisfactory character, so palpable is the abatement in the number of criminals.

PART IV.

IV.—*Some Probable Causes of the general Abatement in Crime.*

From an impartial consideration of the results obtained by the figures given in the foregoing tables, as well as from those included in the Appendix, for the last twenty years, it is conclusive that there has been a continuous and marked abatement in crime in England and Wales; and this fact is the more encouraging when a comparison is made in the numbers with the increased population during the same period.

It may, no doubt, be fairly urged, that certain of the graver crimes, notably burglary and other kindred offences, have, during the period in question, appreciably increased; it can, however, be confidently asserted that much of the supposed increase is apparent, and not real, for in the case of the crimes referred to, as fully stated in a previous portion of this paper, an entirely new classification of burglaries and housebreakings, in the metropolitan police district, adopted in 1878, has, in the subsequent years, materially affected the numbers by increasing them to a large extent; and as the metropolis is annually answerable for nearly one-half (46·8 per cent.) of the *total* committed, this alteration is responsible for the greater portion of the increase in those particular offences. There are, however, some three or four other offences to which attention has been called, which give evidence of a decided rise in their numbers; but allowing fully for these, they do not appear, to any great extent, to enlarge the *totals* of *all offences*.

We will now essay to indicate some of the more palpable causes which have aided in producing results of such an encouraging character.

Police. The initial and principal moving cause in the detection

and repression of crime, is unquestionably the action of the police; for to them, in the first place, as a rule, is reported the commission of an offence; they are relied upon to ascertain how and when such and such a crime was perpetrated; and their aid in the apprehension of the offender is absolutely necessary. In respect of this last operation, their knowledge of the haunts and identity of known thieves is of the greatest value, for by such means they are in the majority of cases able readily to find and arrest the culprit. This special knowledge, in the main, results from the duty cast upon them annually, to furnish to the Secretary of State the fullest information relating to the number of all known bad characters at large within their respective districts; it keeps them, as it were, in touch with all known thieves and suspected characters, and thus effectually aids them in securing the arrest of criminals. To the efficient action of the police in this, and in their other duties, we must assign a large portion of the credit arising from the decided abatement in crime generally.

Reformatory Schools. These schools bear a useful part in the suppression of juvenile criminality. The previous term of imprisonment which their inmates undergo before their transfer to a reformatory school, compels the inclusion of their numbers in those of the prison tables; but the number committed to the schools to undergo a term of detention and training is small in comparison with the number of those juveniles sent to *industrial schools*. In 1869 the number committed to reformatories was 1,294, and in 1888 1,276. The annual average commitments in the last twenty years were 1,324, and the total commitments to these institutions during the twenty years were 26,488. It is certain that many juvenile delinquents by such means are saved, in the large majority of cases, from a career of future crime.

Industrial Schools, of which there are now 134 in operation, are potent in aiding the decrease in crime. If we take the *total* number of children who have been sent to the schools during the past twenty years, we cannot but admit the very successful part they have held in this respect. 61,454 juveniles have become inmates, and 14,818 remained in the schools at the end of the year 1887-88. It is evident, therefore, that by these means a large portion of the supply of the raw material for the manufacture of criminals, has to a great extent been cut off, for such children before their admission to these schools, (under 29 and 30 Vict., cap. 118) were but mere waifs and strays, under no proper control, most of them doubtless on the verge and brink of crime. The record of juveniles (under 16 years of age) committed to local prisons in the same period, affords additional proof of the value of both reformatory and industrial schools for such a purpose; the prison population of juveniles has thus been kept at its present

decreasingly low figures, the numbers having gradually fallen from 10,314, in 1868-69, to 5,065 in 1887-88. It is clear that the powers conferred by certain enactments to intercept uncared for children, have yielded in their beneficent operations, great good to thousands of juveniles, and to the community at large.

There are also numerous other *schools* and *societies* in which destitute children are maintained, and duly trained in industrial habits, until old enough to be sent out into the world, employment having previously been found for them; these institutions have helped, although in a lesser degree, to secure similar results.

The *Discharged Prisoners' Aid Society*, *St. Giles's Mission*, and other similar societies, have for many years past given material assistance to numberless adult, as well as young offenders, who have passed out of prison, the majority of whom but for their valuable and opportune aid, would in all probability have fallen under the influence of old associates, and again relapsed into crime.

There are many other agencies at work in the same direction, they are however too numerous to particularise in the space allotted to this paper.

The various practical and timely measures passed by Parliament, including the "Summary Jurisdiction Act, 1879," have decidedly tended to a decrease in crime, for although in cases which have been summarily disposed of, the term of imprisonment imposed is usually much shorter in duration than if the cases had been remitted to quarter sessions for trial, yet the *prompt* punishment which thus follows the commission of an offence, and its accompanying severity, is known to be most deterrent in all cases, except perhaps in those of hardened offenders.

It is obvious that these combined causes have materially assisted in securing the abatement shown to have taken place in nearly all classes of crime during the last twenty years; while the great reduction in the number of known thieves and other suspected persons at large, as well as in the houses of bad character which they frequent, and more especially the extraordinary diminution in the number of *receivers of stolen goods*, have made manifest the increasing efficiency of the police. When to this is added the fact that, during the period in question, the population of England and Wales has increased by nearly *six millions and a half* (6,463,957), we must admit that the many agencies enlisted for the purpose of diminishing the number of criminals, have been most successfully applied, and the result cannot fail to afford the utmost satisfaction and encouragement to all who are anxious for the improved moral and physical advancement of our nation.

APPENDIX.

TABLE A.—ENGLAND AND WALES. *Table showing the Number of Persons Committed to Prison in 1869 to 1888*
(Compiled from the Reports of the Prison Commissioners.)

Year.	Number Committed (with in some cases Fine or Whipping).						
	Total Sentences of Imprisonment above 6 Months.	6 Months and above 3.	3 Months and above 2.	2 Months and above 1.	1 Month and above 14 Days.	14 Days and under.	Total Sentences of Imprisonment of 6 Months and under.
1869	69	3,001	7,907	11,989	28,348	41,340	92,585
'70	85	3,217	7,955	12,517	28,038	41,191	92,999
'71	69	3,187	7,563	11,288	25,933	38,850	86,863
'72	125	3,258	7,549	11,394	25,362	36,795	84,353
'73	95	3,533	7,755	11,885	26,895	38,494	88,567
'74	126	3,744	7,700	12,291	27,327	38,810	89,894
'75	147	3,852	7,681	12,506	26,969	39,032	90,000
'76	147	3,754	7,318	12,308	27,363	42,031	92,777
'77	188	3,708	8,248	13,291	29,913	45,177	100,337
'78	153	3,805	8,448	13,328	30,133	47,302	103,006
Mean of ten years from 1869 to 1878	} 120.4	3,505.9	7,812.4	12,279.7	27,628.1	40,902.2	92,111.1
Mean of ten years from 1879 to 1888	} 86.2	1,903.0	6,476.1	10,002.4	24,824.8	43,065.8	86,271.3

TABLE B.—ENGLAND AND WALES. *Table showing the Number of Persons Committed to Prison in 1879 to 1888*
(Compiled from the Reports of the Prison Commissioners.)

Year.	Number Committed (with in some cases Fine or Whipping).						
	Total Sentences of Imprisonment above 6 Months.	6 Months and above 3.	3 Months and above 2.	2 Months and above 1.	1 Month and above 14 Days.	14 Days and under.	Total Sentences of Imprisonment of 6 Months and under.
1879	107	3,486	7,886	12,070	27,977	48,950	100,366
'80	91	2,406	7,610	11,462	27,744	53,323	102,546
'81	92	2,003	7,363	10,907	26,543	52,190	99,005
'82	93	2,057	7,300	11,129	27,137	49,813	97,429
'83	94	1,860	6,889	10,332	25,701	41,502	86,278
'84	93	1,779	6,485	10,048	24,611	39,933	82,856
'85	93	1,529	5,617	9,143	23,489	37,586	77,364
'86	52	1,253	5,073	8,129	21,793	34,591	70,875
'87	73	1,276	5,320	8,334	21,964	36,796	73,687
'88	74	1,381	5,218	8,470	21,289	35,974	72,336
Mean of ten years from 1879 to 1888	} 86.2	1,903.0	6,476.1	10,002.4	24,824.8	43,065.8	86,271.3

APPENDIX.

Justices, with their Sentences, in each of the Ten undermentioned Years, from 1879 to 1888 inclusive.

(Official Statistics.)

	To Industrial Schools.	Fined.	Whipped.	To find Sureties or Recognizance.	Delivered to Army or Navy.	Other Punish- ments.	Total Number of Persons Convicted of Offences by Courts of Summary Jurisdiction.
1879	1,436	232,624	811	12,752	2,091	29,166	372,707
1880	1,229	248,542	659	14,422	1,672	28,865	389,712
1881	1,525	267,721	822	15,222	2,520	31,676	407,859
1882	1,449	281,934	837	17,616	2,809	33,032	423,581
1883	2,026	311,502	1,065	17,351	2,374	32,311	456,705
1884	1,734	336,738	1,146	19,039	2,736	33,785	486,786
1885	1,596	361,830	919	18,522	2,751	35,172	512,425
1886	1,882	372,772	1,179	19,268	2,950	34,788	526,915
1887	2,245	358,053	1,333	19,239	3,771	33,296	519,839
1888	2,343	369,586	1,548	18,386	4,197	37,624	538,232
1879-88	1,746·5	314,130·2	1,031·9	17,181·7	2,787·1	32,971·5	463,476·1
1879-88	3,419·4	387,677·0	2,937·2	16,138·0	2,944·5	42,094·4	542,810·0

Justices, with their Sentences, in each of Ten Years from 1879 to 1888 inclusive.

(Official Statistics.)

	To Industrial Schools.	Fined.	Whipped.	To find Sureties or Recognizance.	Delivered to Army or Navy.	Other Punish- ments.	Total Number of Persons Convicted of Offences by Courts of Summary Jurisdiction.
1879	2,215	341,946	1,317	16,781	3,232	39,115	506,281
1880	2,411	348,412	2,621	16,791	2,852	40,357	517,373
1881	2,443	367,334	2,937	16,003	2,766	39,227	530,966
1882	3,218	409,655	3,624	16,912	2,805	40,449	575,593
1883	3,515	431,104	3,115	15,826	2,660	44,899	588,710
1884	3,516	428,619	3,284	16,571	2,782	44,434	583,330
1885	3,263	401,544	2,866	16,144	3,192	42,823	548,436
1886	4,203	373,530	3,157	15,248	3,032	37,763	509,095
1887	4,668	382,553	3,135	14,854	3,203	45,945	529,386
1888	4,742	392,073	3,316	16,250	2,921	45,932	538,930
1879-88	3,419·4	387,677·0	2,937·2	16,138·0	2,944·5	42,094·4	542,810·0

TABLE C.—*Indictable Offences, Number of Persons Committed, or Bailed, for Trial, in each of the undermentioned Years.*

Offences.	1888.	1883.	1878.	1873.	1869.
<i>No. 1. Offences against the Person.</i>					
Murder	90	53	59	59	63
Attempts to murder	30	28	48	20	52
Shooting at, stabbing, wounding, &c., with intent to maim, do bodily harm, &c. }	44	89	150	155	148
Manslaughter	157	234	224	255	216
Attempts to procure the miscarriage of women	17	15	11	14	5
Concealing the births of infants	76	63	83	99	133
Sodomy and bestiality.....	37	34	42	23	45
„ assaults with intent to commit, and other unnatural misdemeanours.... }	62	74	67	62	74
Rape	133	165	140	132	149
Assaults with intent to ravish, and indecent assaults	533	411	317	249	311
Defilement of girls under the age of 13, and attempts ditto (sec. 4, Criminal Law Amendment Act, 1885)..... }	155	10	9	—	—
Defilement of girls between 13 and 16 years, and attempts ditto (sec. 5, ditto) }	137	—	—	—	—
Householder permitting defilement of girls under 13 (sec. 6, ditto)	4	—	—	—	—
Householder permitting defilement of girls between 13 and 16 years of age (sec. 6, ditto)	7	—	—	—	—
Procuration, &c. (secs. 2, 3, and 8, ditto)....	7	—	—	—	—
Abduction of girls under 18 (sec. 7 ditto)....	15	—	—	—	—
„ (sec. 53, 24 and 25 Vict., cap. 100)	—	16	—	—	—
Forcible abduction (sec. 54, ditto)	—	—	—	—	—
Abduction of girls under 16 years of age (sec. 55, ditto)	6	—	5	6	4
Bigamy	80	111	82	98	85
Child stealing	7	5	1	4	6
Unlawfully abandoning children under 2 years of age	8	8	12	13	10
Endangering the safety of passengers on railways	26	8	13	32	33
Assault and inflicting bodily harm	905	762	819	585	628
Assaults (common)	204	173	207	153	249
„ on peace officers in the execu- tion of their duty	44	60	58	52	195
Total of No. 1	2,784	2,319	2,347	2,011	2,396

TABLE C *Contd.*—*Number of Persons Committed, or Bailed, for Trial.*

Offences.	1888.	1883.	1878.	1873.	1869.
No. 2. Offences against Property with Violence.					
Sacrilege	29	11	12	14	26
Burglary	532	443	324	241	550
Housebreaking.....	560	526	453	425	704
Breaking within the curtilage of dwelling houses, and stealing	19	46	37	22	49
Breaking into shops, warehouses, and counting houses, and stealing.....	570	393	423	209	297
Misdemeanours with attempt to commit the above offences	93	70	46	26	44
Robbery, and assaults to rob, by persons armed in company, &c.	326	280	278	255	421
Obtaining property by threats to accuse of unnatural crimes.....	—	1	—	—	1
Assaults with intent to rob, and demanding property with menaces.....	47	41	58	33	59
Stealing in dwelling houses, persons therein being put in fear	3	—	—	—	—
Sending menacing letters to extort money...	1	8	6	4	4
Piracy	—	—	—	4	—
Total of No. 2	2,180	1,819	1,637	1,233	2,155
No. 3. Offences against Property without Violence.					
Cattle stealing	17	16	20	13	19
Horse „	145	101	125	94	145
Sheep „	59	48	59	59	106
Larceny to the value of 5 <i>l.</i> in dwelling houses	179	238	268	220	289
Larceny from the person	875	1,137	1,291	1,206	1,636
„ by servants	286	402	712	940	953
„ simple	4,048	4,924	6,229	6,192	7,574
Stealing from vessels in port, on a river, &c.	46	102	102	108	103
„ goods in process of manufacture....	—	—	—	—	10
„ fixtures, trees, and shrubs growing, &c.	75	64	98	76	227
Misdemeanours with intent to steal	81	5	68	51	51
Embezzlement	152	215	301	271	334
Stealing and receiving letters stolen from the Post Office by servants.....	78	58	44	34	28
Receiving stolen goods	308	358	480	445	607
Frauds and attempts to defraud	1,052	1,119	970	807	1,009
Total of No. 3	7,401	8,817	10,767	10,516	13,091

TABLE C *Contd.*—*Number of Persons Committed, or Bailed, for Trial.*

Offences.	1888.	1883.	1878.	1873.	1869.
<i>No. 4. Malicious Offences against Property.</i>					
Setting fire to a dwelling house or shop, } persons being therein	1	3	4	2	2
Setting fire to a house, warehouse, corn- } stack, &c.	117	151	92	91	205
Setting fire to crops, plantations, heath, &c.	8	13	21	1	6
Attempts to commit arson, set fire to } crops, &c.	7	15	3	5	7
Riot, and feloniously demolishing build- } ings, machinery, &c.	—	2	31	—	74
Destroying silk, woollen, &c., goods, in } process of manufacture	—	1	—	1	—
Destroying hop-binds, trees, and shrubs } growing, &c.	4	11	2	11	3
Killing and maiming cattle	7	7	8	14	18
Sending letters threatening to burn } houses, &c.	—	—	—	—	—
Malicious injuries to property exceeding } 5 <i>l.</i> in value	64	39	63	19	19
Other malicious offences.....	53	59	31	17	48
Total of No. 4	261	301	255	161	382
<i>No. 5. Forgery and Offences against the Currency.</i>					
Forging and uttering forged Bank of } England notes	—	—	—	—	—
Forging and uttering other forged instru- } ments.....	209	221	244	157	185
Having in possession, &c., forged Bank } of England notes	—	—	1	—	—
Counterfeiting the current gold and } silver coin	—	2	6	1	2
Having in possession, &c., implements } for coining	12	4	24	9	18
Buying and putting off counterfeit gold } and silver coin	—	1	—	1	—
Uttering and having in possession ditto	184	265	202	211	401
Total of No. 5	405	493	477	379	606

TABLE C *Contd.*—*Number of Persons Committed, or Bailed, for Trial.*

Offences.	1888.	1883.	1878.	1873.	1869.
No. 6. <i>Other Offences not included in the above Classes.</i>					
High treason and feloniously compassing } to levy war	—	—	—	—	—
Treason felony.....	—	12	—	—	—
Assembling armed, &c., to aid smugglers...	—	—	—	—	—
Assaulting, &c., officers employed to pre- } vent smuggling	—	—	—	—	—
Deer stealing, and feloniously resisting } deer keepers	—	—	—	—	—
Being out armed, taking game, and as- } saulting gamekeepers	100	89	91	56	103
Taking and destroying fish in enclosed } water.....	11	20	—	3	6
Being at large under sentence of trans- } portation or penal servitude	—	—	1	2	5
Prison breaking, harbouring and aiding } the escape of felons	1	1	5	10	4
Perjury and subornation of perjury.....	74	96	71	88	86
Riot, sedition, &c.	—	—	—	—	—
„ breach of the peace, and pound- } breach	23	46	148	25	183
Rescue, and refusing to aid peace officers...	1	—	6	3	1
Keeping disorderly houses.....	19	95	105	76	32
Indecently exposing the person.....	12	13	4	8	8
Offences under the Bankruptcy Acts, } 1869 and 1883, and the Act for the } Abolition of Imprisonment for Debt, } 1869	44	52	67	24	41
Suicide, attempting to commit	169	111	71	34	40
Felonies not included in the above } denominations	13	59	81	62	27
Misdemeanours ditto	252	316	239	202	152
Total of No. 6.....	719	910	889	593	688
Grand total	13,750	14,659	16,372	14,893	19,318

TABLE D.—ENGLAND AND WALES. *Table showing the Number and Classification of the Ten undermentioned Years*
(Compiled from)

Years.	Death.	Penal Servitude.						
		Life.	Above 15 Years.	15 Years and above 10.	10 Years and above 7.	7 Years.	5 Years and 6 Years.	Total Penal Servitude Sentences
1869.....	18	8	15	43	278	1,187	475	2,006
'70.....	15	6	9	42	234	1,105	392	1,788
'71.....	13	4	15	53	225	974	356	1,627
'72.....	30	14	17	32	240	920	291	1,514
'73.....	18	8	18	57	219	858	333	1,493
'74.....	26	16	33	67	285	973	316	1,690
'75.....	33	16	28	59	276	916	344	1,639
'76.....	32	13	27	96	352	903	362	1,753
'77.....	34	11	25	73	344	846	340	1,639
'78.....	20	14	25	71	297	877	350	1,634
<i>Mean of ten years } from 1869 to 1878 }</i>	23'9	11'0	21'2	59'3	275'0	955'9	355'9	1,678'3
<i>Mean of ten years } from 1879 to 1888 }</i>	22'9	9'5	17'8	43'2	149'2	284'0	74'3	1,245'4

TABLE E.—ENGLAND AND WALES. *Table showing the Number and Classification of the Ten undermentioned Years*
(Compiled from)

Years.	Death.	Penal Servitude.						
		Life.	Above 15 Years.	15 Years and above 10.	10 Years and above 7.	7 Years.	5 Years and 6 Years.	Total Penal Servitude Sentences
1879.....	34	10	31	60	235	681	485	1,502
'80.....	28	8	27	42	221	352	873	1,523
'81.....	23	17	14	54	211	322	907	1,525
'82.....	22	7	19	47	153	295	843	1,364
'83.....	23	10	28	28	155	272	885	1,378
'84.....	38	13	15	40	140	270	871	1,349
'85.....	25	8	8	33	114	181	683	1,027
'86.....	35	8	8	39	107	137	611	910
'87.....	35	10	24	45	70	160	639	948
'88.....	36	4	4	44	86	170	616	924
<i>Mean of ten years } from 1879 to 1888 }</i>	29'9	9'5	17'8	43'2	149'2	284'0	74'3	1,245'4

Sentences Passed upon Offenders Convicted at Assizes and Quarter Sessions in each
m 1869 to 1878 inclusive.

Judicial Statistics.”)

Above Years.	Imprisonment, with in some cases Whipping, Fine, &c.						Detained in Reformatory or Industrial Schools.	Fine or Discharge on Sureties.	Total Con- victed.
	2 Years and above 1.	1 Year and above 6 Months.	6 Months and above 3.	3 Months and above 1.	1 Month and under.	Total Imprison- ment Sentences.			
—	1,416	3,561	3,546	2,260	962	11,745	257	314	14,340
—	1,297	3,158	3,284	2,062	901	10,702	206	242	12,953
—	1,115	2,975	3,159	1,884	762	9,895	188	223	11,946
—	1,033	2,758	2,765	1,658	727	8,941	178	199	10,862
—	1,074	2,857	2,836	1,628	746	9,141	236	201	11,089
—	1,070	2,982	2,765	1,684	812	9,313	173	307	11,509
2	1,124	2,800	2,658	1,545	743	8,872	165	245	10,954
1	1,223	3,066	3,208	1,789	733	10,020	145	245	12,195
2	1,198	3,046	2,929	1,774	844	9,793	184	292	11,942
1	1,202	3,191	3,054	1,904	866	10,218	210	391	12,473
0·6	1,175·2	3,039·4	3,020·4	1,818·8	809·6	9,864·0	194·2	265·9	12,026·3
0·8	1,215·0	2,789·6	2,772·8	1,652·0	874·1	9,304·3	143·5	413·0	11,135·7

Sentences Passed upon Offenders Convicted at Assizes and Quarter Sessions in the
m 1889 to 1888 inclusive.

Judicial Statistics.”)

Above Years.	Imprisonment, with in some cases Whipping, Fine, &c.						Detained in Reformatory or Industrial Schools.	Fine or Discharge on Sureties.	Total Con- victed.
	2 Years and above 1.	1 Year and above 6 Months.	6 Months and above 3.	3 Months and above 1.	1 Month and under.	Total Imprison- ment Sentences.			
—	1,260	3,293	3,236	1,872	779	10,440	195	354	12,525
2	1,154	2,975	2,636	1,569	811	9,147	183	333	11,214
—	1,233	2,959	2,802	1,475	797	9,266	163	376	11,353
2	1,320	2,987	3,020	1,620	766	9,715	189	409	11,699
1	1,317	3,010	2,805	1,545	777	9,455	160	331	11,347
2	1,257	2,793	2,739	1,555	789	9,135	158	454	11,134
—	1,166	2,650	2,694	1,549	832	8,891	117	440	10,500
1	1,184	2,495	2,559	1,849	1,111	9,199	80	462	10,686
—	1,194	2,332	2,602	1,683	970	8,781	87	487	10,338
—	1,065	2,402	2,635	1,803	1,109	9,014	103	484	10,561
0·8	1,215·0	2,789·6	2,772·8	1,652·0	874·1	9,304·3	143·5	413·0	11,135·7

DISCUSSION *on* MR. GROSVENOR'S PAPER.

THE CHAIRMAN (Mr. F. Hendriks, Vice-President) characterised the paper as a most valuable one, by a gentleman thoroughly well acquainted with the subject of criminal statistics, and whom the Council of the Society was glad to welcome as a successor to a former colleague—the late Mr. Samuel Redgrave—and to whom in former days they looked for instruction in such matters. The paper would tend to correct many preconceived notions, because, owing probably to the greater prominence given by the press to even the most trivial offences, there was an idea afloat that crime was on the increase, whilst the contrary is the fact, and the figures given by Mr. Grosvenor would render a public service in correcting such an erroneous impression.

MR. JAMES MONRO, C.B. (Chief Commissioner of Police), said he had not expected to be called upon to make any remarks, and, as was well known, it was the business of the police to get all information they could, and give none. Still, as the lecturer had proceeded, one or two observations had occurred to him which he would be glad to make. In connection with the probable causes of the abatement of crime mentioned in the paper, there was one part connected with the duties of the police which he wished to enlarge upon, namely, the special effect which the provisions for the supervision of criminals had had. It might not be generally known that all ticket-of-leave holders and supervisees were under police supervision. They were not allowed to leave the district without reporting themselves, and they also had to report themselves every month. If there was one thing the habitual criminal hated, it was supervision, when it was effectively carried out, and when it was effectively, as he believed it was, as well as mercifully carried out, he considered it had a great effect in diminishing crime. There had been talk recently about giving lighter sentences to habitual criminals. He hoped he should not be misunderstood when he said that on the regular, habitual criminal, he did not think a light sentence had any effect at all, and it was a mistaken leniency to expose the public to his depredations simply under the name of philanthropy. He had no objection to philanthropy being shown, but the public should remember that if they were going to introduce this question of philanthropy into criminal administration, they must be prepared to pay for it either by an increase of crime or by considerable increase of the police force. These might seem hard words, but he appealed to every one's practical experience whether there was not good reason for his having used them. There was nothing more effective, in his opinion, in preventing crime than good detection, and good detection, to be followed by adequate punishment on conviction, meant good prosecution of

cases. The police were very hardly and unfairly handicapped in the matter of prosecution. It was not legally the business of the police to prosecute offenders. This duty devolved on the public prosecutor, and on private prosecutors. There was a public prosecutor, but as a matter of fact he did not think they would find he appeared except in very serious cases, and the bulk of prosecutions was practically conducted by the police without legal assistance. He had a very strong opinion on that point. He considered they ought to have better legal assistance. If they had, he was certain there would be better results with reference to the cases detected, and with better detection, followed by punishment of offenders, better prevention of crime. [The Chairman: You mean you have no funds applicable.] Mr. Monro said the police had no funds at all for the purpose, and furthermore their position as prosecutor was not recognised by law. It was perfectly competent and proper for the solicitor for the defence in any case, to stand up and say that the inspector of police who happened to be in charge of the case had no business at all to address the court, and the magistrate would then have to say to the inspector, "sit down." The result was that many cases were conducted before magistrates without any legal assistance whatever, and the duty of prosecuting was put on the police. That, he thought, in a good many cases led to the offender not being convicted as he would have been if legal assistance were available.

Mr. T. L. MURRAY BROWNE (Hon. Secretary, Central Committee of Discharged Prisoners' Aid Societies) said it was a matter of great good fortune that this discussion should follow upon the last night's debate in the House of Lords on Lord Herschell's motion. Crime had undoubtedly very markedly diminished during the period mentioned in the paper, and he only hoped that that diminution was not at an end, though there were one or two facts which pointed uncomfortably in that direction. Sir Peter Edlin recently stated that crime was at a standstill, while the chief constable of Liverpool had stated that crime there had increased, and was increasing. A very considerable change was taking place in the policy of judges and recorders upon this question of crime. A school had sprung up, both among judges and recorders, which appeared expressly to disapprove of increasing the penalty after repeated convictions. They considered that only the present crime, and not the previous history of the criminal, should be looked at. It was not surprising that Lord Coleridge should have risen to disavow his sympathy with such a doctrine. If such a view were acted on it would amount to this, that if Bill Sikes and Oliver Twist were caught breaking into a house, they should receive identically the same sentences. Such views were defended openly in the press, and by gentlemen in high positions who ought to know better. "Is it not monstrous," they say, "that for such a trifling offence there should be so long a sentence?" The offender may have been Bill Sikes, or the Artful Dodger, or Fagin himself. "Never mind," say these gentlemen, "he has only on this occasion been found guilty of stealing sixpence, and it is monstrous for

such an offence to sentence a man to anything more than a trifling punishment." A question had been addressed to all the Discharged Prisoners' Aid Societies, asking what was their experience in regard to prisoners who had been four times convicted, but not sentenced to penal servitude, and had been assisted during a given period, say, one year. How many of them had turned out (a) satisfactory; (b) unsatisfactory; (c) reconvicted. Detailed replies were received from fifteen different societies, not all working in the same way or with the same machinery, giving a total of 253 such cases. Of those only 95 were reported as "satisfactory;" 55 were reported as "unsatisfactory," and 66 were "reconvicted;" 37 being unknown or unaccounted for. One society (Aberdeen), replied that less than one-fourth of such cases turned out satisfactory. Some societies would not assist at all prisoners after repeated convictions. The statistics relating to persons who had been sent to penal servitude were very much more satisfactory. Another question sent out was, "Do you consider repeated short sentences (*i.e.*, short of penal servitude) desirable?" Eleven societies replied "No." Others expressed no opinion. Many years ago his uncle, Mr. Barwick Baker, of Hardwicke, had fought the same battle as was now to be fought again. The point however upon which Mr. Baker had found most difficulty, was in persuading people that very lenient sentences should be passed upon *first* offenders. Times had now so completely changed, that the difficulty now was to induce people to pass any long sentences at all, even on the worst offenders. According to Mr. Baker's book, "War with Crime," at Cheltenham, in 1856, there were 53 boys sent to prison. The magistrates then adopted the plan of sending every boy on his second conviction for a term of years to a reformatory, and the next year the number sank to 14, in 1858 to 25, in 1859 to 14, and in 1860 to 13. In 1861 the magistrates reverted to their former system of passing sentences which they regarded as proportioned to the offence, and in that year 24 were convicted as against 13 in the previous year; in 1862 the number was 49. In 1863 the magistrates returned to the old system, and then the number fell to 24, and in 1864 to 13.

Mr. ROWLAND HAMILTON, referring to the question of education as bearing on the abatement of crime, said there were some children somewhat abnormally constituted, to whom the conditions of life were more than usually irksome. A course of persistent discipline, firmly, but not cruelly enforced, was necessary to awaken in them a sense of their duty to their neighbours, and of harmony with the life around them. Truant schools were an experiment which he was not satisfied had proved a success. He had heard it said that those who had been sent to them were indeed afraid to become truants again, but were further than ever from becoming docile or willing scholars. Mr. Baker, to whom reference had been made, once told him that many of those who were discharged after a first conviction, had worked their way back into society again, most frequently in their own villages, where they were under the influence of their former neighbours. At one period of his life he

had been intimately acquainted with naval and military authorities in active service on foreign stations, and had gathered from his conversations with them, that there were many men who under discipline were thoroughly competent and trustworthy, but without the support of discipline were totally unable to resist temptations and make good use of their liberty. [He by no means wished to imply that this was the usual characteristic of this most useful body of men, who, as a rule, maintained in after life the excellent habit which they had acquired in the service—but the exceptions referred to were not the less significant.] It was satisfactory to note from Mr. Grosvenor's figures that the proportion of those who were outside the pale of well-ordered society was comparatively small. They were exceptional characters, and must in some measure be treated as diseased, although he would by no means adopt the mistaken notion that these cases of moral disease were not to be met by proper restraints, and if necessary appropriate punishments. He quite agreed with the remark that the peaceable citizens should be considered as well as the criminals, and to act as though a certain crime might be purchased by so much punishment, was as grave a mistake as could possibly be made.

Mr. T. H. ELLIOTT thought a little time was needed in order to arrive at a just conclusion as to the lessons the paper taught. There were a great many pitfalls for the ordinary reader in the statistics of crime, caused by many changes of procedure and classification, and an experienced guide was needed. The area of crime to be dealt with was clearly much larger than many persons supposed. Tables 2 to 4 showed a remarkable decrease in the number of known thieves, suspected persons, &c., but the proportion was still one in every 871 of the population. Those not capable of committing crime at all ought really be excluded from the calculation, in order to get an accurate idea of the numbers of the criminal classes. [The Chairman said that would be a constant in both cases.] Mr. T. H. Elliott quite admitted that, but he was referring simply to the positive number of the criminal classes. Table 6 gave the number of offences determined summarily, and even excluding elementary education and vaccination offences, the number of persons against whom summary proceedings were taken amounted to 589,000. Such a figure evidenced an amount of disposition to law breaking which was much to be regretted. Cases of drunkenness had increased from 122,000 in 1868, to 166,000 in 1887, and he wished Mr. Grosvenor had found it possible to determine whether this increase had any relation to the number of licensed houses. Such a comparison might be useful in connection with the proposals recently made for the purpose of restricting the issue of new licences. The paper removed a not uncommon fallacy as to the results of the Education Act upon crime. The opinion had been frequently expressed that that Act, although decreasing the number of cases of offences against the person, would increase the number of offences the committal of which required the possession of a certain amount of education. But that did not appear to be the case. The increase had been in crimes with violence against

the person, while the decrease had been in crimes without violence. He attributed the large increase in the number of offences against women to the greater detail with which those cases were now reported in the newspapers. He entirely agreed with what had been said about the improved efficiency of the police. When Mr. Goschen made his financial statement in the House of Commons, none of his proposals were better received than the proposal to give 300,000*l.* in aid of police superannuation. There appeared to be a general feeling that it was a just recognition of the efficient services which that body rendered, and to which Mr. Grosvenor had given so important a place amongst the causes tending to the diminution of crime.

Mr. WALTER HAZELL, referring to the change in the action of judges in the direction of short sentences, said if judges were but human, public opinion was generally still more human. Was it not possible that during the period under review a change had taken place in public opinion, so that whereas twenty years ago people were inclined, whenever an opportunity occurred, to put the law in force, more humane councils now prevailed with regard to first offences? There could be no doubt that public opinion had gone more strongly against assaults on women, but was it not possible that it had taken a more merciful view of such offences as larceny, the conviction for which had greatly decreased, while possibly the actual number of offences had not diminished in like proportion?

The CHAIRMAN said he was afraid that that question was rather an ethical than a statistical one. They must all have felt that the paper was not only valuable and interesting to the Society, but useful to the public. The meeting must also congratulate itself on having had the presence of some gentlemen of great experience who had thrown very great light on the subject, and for their remarks they were very much obliged. Few papers had of late been read before the Society, containing so many figures, which had challenged so little criticism, for Mr. Grosvenor's conclusions had been generally accepted. He did not quite agree with him in including suicide as a crime, it was generally the result of disease in the brain, and he thought the statistics of suicide in connection with the police were of no importance whatever. The numbers were simply an index of the greater or less activity of the police in detecting intentions to commit suicide, and in most cases, of course, those who intended to make away with themselves were able to effect their object before the police could gain any knowledge of the intention, or could interfere in any way to prevent its being carried out.

Mr. GROSVENOR, in reply, said he took as a compliment the chairman's statement that very little criticism had been passed on the paper. The reason, he supposed, was that there was very little in it that could fairly be challenged. He felt assured that the figures were perfectly correct, and his deductions were in the

main simply comparisons and calculations. He might own that he had omitted several causes which would conduce to a diminution in crime, but he had to keep his paper within a certain limited compass, and there were therefore many points which he had designedly excluded. With regard to the chairman's remarks in reference to attempts to commit suicide, the fact was that it *was* an offence, and as the figures showed an unusually large increase, he felt it his duty to cite it, and to show the extent of the increase in the last two years of the period under notice. For the rest, he was well content at the reception which the paper had met with.

The POSITION and PROSPECTS of INDUSTRIAL CONCILIATION.

By L. L. PRICE, ESQ., M.A.

[Read before the Royal Statistical Society, 20th May, 1890.

SIR RAWSON W. RAWSON, K.C.M.G., C.B., a Past President, in the Chair.]

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I.—Introduction: the Prominence of the Question.

IN December, 1886, I had the privilege of submitting to this Society a paper entitled "Sliding Scales and other Methods of "Wage-Arrangement in the North of England."¹ In that paper I attempted to give some account of the methods by which industrial disputes had been prevented or adjusted in the coal and iron industries. In returning on the present occasion to this subject of the peaceful settlement of industrial quarrels, I have the advantage, or perhaps I should more properly say the disadvantage, of dealing with a topic which is now engaging a considerable share of public attention. It is indeed no new thing in the history of industry to hear of strikes, and rumours of strikes; and he would be a sanguine, if not a foolhardy, prophet who should predict with any confidence their cessation in the near, or even distant, future. But at the time when my former paper was read, the industry and

¹ Cf. vol. 1, part i of the *Journal*, pp. 5—74.

commerce of the country were still suffering from continued depression, or were at any rate but very slowly recovering from it; and it is a well-attested fact of industrial experience that strikes occur in greater abundance, and are more frequently successful, at a time of rising than of falling prices, of improving rather than of declining trade. For this reason alone, if there were no other, the question of the peaceful adjustment of industrial disputes would be more prominent in 1890 than it was in 1886.

But there are other reasons as well. Whatever verdict may finally be pronounced upon the justice or injustice, the reasonableness or the want of reason, the permanent success or the ultimate failure of the strike among the dock labourers in the Port of London during the autumn of last year, of this at least there can be no doubt, that by its magnitude and its peculiar incidents it riveted for a time the attention of the public; and it contributed to bring into prominence the methods and means by which such disputes might be prevented or adjusted. It has had the additional consequence that it has occasioned similar movements, some successful, some unsuccessful, among other classes of unskilled labourers; and it has set in motion—whether for good or for evil—disturbance in the labour-market generally. The space devoted in the columns of the daily newspapers to “Labour and Wages” has appreciably increased since the occurrence of that strike; and although this fact does not necessarily imply that industrial quarrels are more abundant or serious than they have been at previous periods, it does signify that the general public is more fully and speedily acquainted with their occurrence, their causes, their incidents, and their results.

And, again, the vast proportions of the strike which recently threatened in the coal trade, and the large numbers embraced within the combination of miners on the one side, and colliery owners on the other, have served the purpose of a conspicuous illustration in arousing the general public to the desirability of seeking for some practicable means of effecting a peaceful adjustment of industrial quarrels.

One other reason may be given for the present prominence of the subject. It is not merely, or perhaps chiefly, in England that the “Labour Question,” as it is sometimes called, is pressing for solution. The occurrence of prolonged and bitter contests in the mining industry of Germany may be considered to share with the electoral successes of the Social Democrats, and the traditional policy of protecting the poor of the Hohenzollern dynasty, the responsibility for the recent International Labour Conference at Berlin. In Belgium and France, again, the existence of *conseils de prud’hommes* has not prevented industrial disputes. There is

indeed considerable misunderstanding with regard to the precise functions of these bodies. They do not appear to be concerned with the determination of the rates of wages for the future; but they supply a convenient mechanism for the settlement of quarrels between employers and employed about the payment of wages in the past, and questions of dismissal and apprenticeship.

II.—*The Continental Conseils de Prud'hommes.*

In Belgium, a commission was appointed in 1886 to inquire into the conditions of labour; and witness after witness before that commission advocated in some cases an extension of the authority of the *conseils de prud'hommes* to questions connected with the future rates of wages, in others the establishment by their side of councils of conciliation or courts of arbitration after the "English" pattern.² It is a curious and instructive circumstance that these continental *conseils* should undoubtedly have suggested the model for the councils of conciliation authorised in England by Lord St. Leonards' Act of 1867,³ but never, so far as I am aware, established in any district, and that the copy should follow the pattern so closely as to be expressly precluded from any determination of the future rate of wages; and that now a witness before a Belgian commission should be reported as explaining what is done in England by means of conciliation and arbitration to avoid the strikes which have been the cause of such injury and annoyance in his own country.

Nor is the state of affairs different in France. In the "Times" of the 20th March last a summary was given of a report on the French *conseils de prud'hommes* which had been sent from the British Embassy at Paris to the Foreign Office; and in that report it was expressly stated that the *conseils de prud'hommes* had no voice in the settlement of strikes as they were not concerned with the fairness, or unfairness, of wages. M. Lockroy, it was stated, had recently submitted two Bills to the French Chamber of Deputies, not merely one for extending the jurisdiction of the one hundred and thirty-six existing *conseils* from the trades to which at present they alone applied—the trades engaged in the transformation of materials—to all trades and manual labour generally, and for simplifying their procedure, but also another Bill for the constitution of boards of arbitration on the English model. The latter Bill, the report affirmed, had been introduced expressly on the ground that it was not thought to be possible to make the *conseils de prud'hommes* deal with strikes.⁴ M. Victor Turquan, indeed, in a paper⁵ on "Strikes in France since 1874," which was

² See Appendix A.

³ 30 and 31 Vict., cap. 105.

⁴ See Appendix B.

⁵ See Appendix C.

published in the Journal of the Statistical Society of Paris in September, 1889, gave a total of 804 strikes reported in France during the years 1874-85 by the préfets to the Minister of Commerce and Industry. The continental *conseils de prud'hommes*, then, do not as a matter of fact prevent, nor are they, it would seem, intended to prevent, the occurrence of disputes on that industrial question which of all others is the most likely to occasion disputes—the question of the settlement of wages for the future—and the continental workman is undoubtedly ceasing to deserve in the matter of strikes the epithet of “inert” applied to some members of his class by an American consul in 1887.⁶

III.—*The Advantages of the Prominence of the Question.*

The prominence which attaches at the present time to the question of industrial disputes has its advantages and its drawbacks. It has undoubtedly the great advantage of leading men to seek for some practicable means of preventing, or at least of adjusting, such disputes. At a time when the gravity of the question is brought home to the public mind by some conspicuous example, the arguments in favour of the peaceful settlement of industrial quarrels acquire additional weight, and men are more inclined to give an experimental trial to plans and proposals which appear to promise success. The scheme put forward by the London Chamber of Commerce for the constitution of a “permanent body,” under the name of the “London Conciliation Board,” and explained in a letter to the “Times” newspaper of the 10th February last,⁷ might, it is true, have been propounded in the ordinary course of affairs, had no strike taken place among the dock labourers in the Port of London; but it is only prophesying after the event to say that the strike furnished the occasion for the scheme, if it did not suggest it. The dispute, again, between the colliers and the colliery owners in the spring of this year, which at one time threatened to issue in a general strike, and was only adjusted when work had been actually suspended, promised to leave behind it an “arrangement” of some systematic and permanent character for the settlement of wages questions in the future. And it is scarcely fanciful to say that such a desirable consequence as this, should it in reality ensue, might be ascribed in some measure to the very magnitude of the combination of masters and men on either side, and in some measure also to the pressure of public opinion, which was seriously alarmed by the imminent prospect of a coal famine in London.

And once more, if we look abroad, we can hardly fail to recognise that the proposals to establish courts of arbitration after

⁶ See Appendix D.

⁷ See Appendix E.

the English pattern in France and in Belgium, would not be urged so pressinglly had it not been for the outbreak of labour troubles in both countries;⁸ and that the presence of such veterans in conciliation and arbitration as Mr. David Dale of Darlington and Mr. Thomas Burt of Northumberland at the International Labour Conference at Berlin—a conference which, as we saw, might be said in some measure to owe its origination to the miners' strike in Westphalia—must result at least in making Germans acquainted with the methods of wage-arrangement which have been pursued in the iron and coal trades of the north of England.⁹

IV.—*The Board of Conciliation and Arbitration in the Manufactured Iron Trade of the North of England.*

It is, indeed, only at times like this that the general public becomes aware of what has been done as a matter of actual fact in the past to prevent or adjust industrial disputes. It is only at such a time that it is possible to awaken effective interest in such an important chapter of industrial history as that containing the record of the Board of Conciliation and Arbitration in the Manufactured Iron Trade of the North of England. In my former paper I arranged, for purposes of convenience, the methods of adjusting industrial quarrels in three rough stages, the first of which I distinguished as irregular negotiations between employers and employed, the second as the establishment of a regular board of conciliation and arbitration, and the third as the institution of a sliding scale. As an illustration of the second of these stages I selected the Board of Conciliation and Arbitration in the Manufactured Iron Trade of the North of England; and I attempted to give a history of the constitution and working of that board. Were I now to endeavour to bring my history down to date, I do not know that I should have to add much to my former account beyond the fact that the board was still in existence, and still successful.¹⁰ But I must, at the risk of some repetition of what I said in

⁸ Especially in the coal mining industry at St. Etienne in France in August, 1888, and in Belgium in the latter months of the same year. With regard to Belgium, Mr. Burnett remarks (p. 103) in his report to the Board of Trade on the Strikes and Lock-outs of 1888, that "experience has shown that the practice of "striking is highly contagious;" and describes the disturbances in the coal field in 1888 as taking the form of a "strike epidemic." "Violence and bloodshed," he observes (p. 104), "seem concomitants of most continental strikes."

⁹ After the strikes in Westphalia, tribunals of arbitration were established in the State mines in obedience to the commands of the emperor, and the resolutions of the labour conference comprised among their number a declaration in favour of conciliation and arbitration. Mr. Dale is reported to have given an account to the conference of the work accomplished in this direction in England.

¹⁰ At the annual meeting of the board in 1888, when it was entering upon the twentieth year of its existence, the president declared that he "could not tell the "blessing the board had conferred on the employers and operatives of the north

my previous paper, enforce the contention that this board may fairly be regarded as furnishing a crucial instance of the feasibility of the peaceful adjustment of industrial disputes. I do not believe that it would be possible to discover any trade in which the difficulties of establishing and maintaining such a board could be more serious than they would appear to be in the manufactured iron trade. Nor do I think that it would be easy to find any other industry in which a board of conciliation and arbitration had been attended with such indisputable success.

And so I venture to regard this board as supplying an example of what Lord Bacon called an "*instantia crucis*."¹¹ What has as a matter of fact been done here, can be done elsewhere; and the solid results which have been attained in this industry are worth making an attempt to attain in others. In studying the record of

"of England." The history of the board between December, 1886, and the present time, has been kindly supplied to me by Mr. Winpinny (the employers' secretary). From the end of 1886 to November, 1888, the *status quo* was maintained. In November, 1888, the men claimed an advance of 10 per cent., and Mr. Watson, sitting as arbitrator, awarded 5 per cent. In the following January the men claimed a further advance, and the employers conceded an additional $2\frac{1}{2}$ per cent. A committee was also appointed to consider the question of the adoption of a sliding scale; and in April a scale was established on a basis of shillings of wages for pounds of selling prices, and two shillings over. Continuing therefore the table contained in my former paper (p. 19), it would run as under:—

Date of Settlement.	Occasion and Nature of the Wages Settlement.	Duration of Settlement.	Average Selling Price of Iron.	Amount over Shillings for Pounds.	Wages arranged (Long Weight).	Wages arranged (Short Weight).	Percentage of Advance or Reduction.
Nov. 28, 1888	Mr. R. S. Watson's award at Newcastle. Workmen claim advance of 10 per cent.	Subject to one month's notice	£ s. d. 4 16 -29	s. d. 2 6	s. d. 7 3	s. d. 6 9*	Per cent. + 5
Jan. 28, 1889	Mutual arrangement between employers and men. Committee appointed to consider question of sliding scale.	Until June 30, 1889	...	...	...	7 -	+ $2\frac{1}{2}$
April 15, 1889	Sliding scale fixed by mutual arrangement on a basis of 2s. over shillings for pounds (short weight). Scale to last for two years, July 1, 1889, —July 1, 1891.	For two months ending— June 30, 1889 ... Aug. 31, " ... Oct. 31, " ... Dec. 31, " ... Feb. 28, 1890 ...	5 7 8·18 5 11 7·09 5 15 5·79 6 1 4·06 6 12 2·39	2 - " " " "	... ... ... ... ...	7 6† 7 " 9 8 - 8 6	+ 5 = + $2\frac{1}{2}$ + $2\frac{1}{2}$ + 5

The figures given in the report of this arbitration are "short weight," and this method of calculation seems to be in place of "long weight." See Note 3 to Table in my former paper.

* the wages to be paid during the two months ending 31st August, 1889, and so on.

The title of the board is now the Board of Conciliation and Arbitration for the Manufactured Iron and Steel Trade of the North of England.

¹¹ The metaphor seems to be taken from a sign-post standing at the point where two or more roads diverge, and indicating the direction to be taken by the traveller.

this board we are not indulging in fanciful speculation, or *a priori* deduction; but we are endeavouring to gather the lessons of actual experience.

Let me then, referring to my previous paper for detailed evidence in support of what I urge, briefly review the difficulties which have confronted the Board of Conciliation and Arbitration in the Manufactured Iron Trade of the North of England; and let me adduce as proof of the success with which it has overcome those difficulties the fact of its continuous existence for a period of more than twenty years. What then, let me ask, are the chief conditions which would be likely to conduce to the establishment and effective working of such a board? In the first place the trade itself must not be liable to sudden and frequent fluctuations; for, if prices rise, the men will want an advance of wages, and if prices fall, the masters will insist on a reduction, and the more often these changes in prices occur, and the wider the range over which they extend during a limited period, the more likely is the existence of irritation and friction, and the occurrence of actual conflict between masters and men. The second condition of the settlement of industrial disputes may be said to lie in a friendly disposition of employers and employed to one another; and these amicable relations are *ceteris paribus* more likely to arise when masters and men are personally known to one another. The third and final condition is that the men should be educated and intelligent.

But of these three conditions not one was to be found in the manufactured iron trade of the North of England. The iron industry was especially subject to violent fluctuations; the development of it in the Cleveland district had been marked by a rapidity almost fabulous, and the population of the town of Middlesbrough had speedily increased to a surprising extent owing to the immigration of the most various classes of workers from other districts, including among their number several Irishmen; and, thirdly and lastly, the character of the work was such as almost to preclude the possibility of any intellectual self-culture among the workmen. "Puddlers as a class," said one of their number, were "not very intelligent, and, if they were very intelligent, they would not be puddlers."

Such then are the adverse conditions, the effect of which was intensified rather than otherwise by the occurrence of a bitter and prolonged dispute on the eve of the formation of the board, which have attended conciliation and arbitration in the manufactured iron trade of the North of England; and I ask whether the fact that the board of conciliation and arbitration established in that trade in 1869 is in existence in 1890, and that it has during the

interval successfully adjusted over 850 disputes—I ask whether that fact alone is not sufficient to prove the feasibility, and to illustrate the advantage, of the peaceful settlement of industrial quarrels. What has been accomplished here can—there is no doubt about the possibility, whatever we may say as to the probability—be accomplished elsewhere; and the study of the particular mechanism adopted in this industry is likely to conduce to its successful application to other trades. One of the advantages which attaches to the present prominence of the question of industrial disputes, is that an opportunity is offered for drawing attention to such an important and instructive chapter of industrial history as that connected with the Board of Conciliation and Arbitration in the Manufactured Iron Trade of the North of England.

V.—*An Elementary Principle.*

There is a third advantage which may be said to follow from the present prominence of the question. Not only are men more disposed to give a trial to plans which promise to be successful, not only are they inclined to lend a more attentive hearing to the account of experiments which have as a matter of actual fact been attended with success; but, by dint of the very abundance of discussion on the subject, and by dint also of the study of previous experiments, they are more likely at this than at other times to apprehend some of the elementary principles of the question.

It has been remarked by some one that the greatest discovery of modern politics has been the system of representative government. I scarcely think it an exaggeration to say that the cardinal condition of industrial conciliation consists in the application to industrial affairs of this principle of representation. It is obvious that successful negotiation between employers and employed can only be carried on if there be a few representatives on either side; and it is obvious also that an agreement attained by means of such negotiation will only be observed if the negotiators are considered by the general body of masters and men to be really representative. And so the keystone of the matter is found in this representation; and, if it be effective, there is a guarantee for the success of negotiation; but, if it be deficient or non-existent, the chance of successful negotiation is lessened, if it be not entirely removed.

It matters not what be the particular form of industrial conciliation adopted. If there be irregular negotiations between masters and men, then the negotiators should be true representatives. They should be regarded as such, and be armed with full authority to act in that character. If there be a board or committee of conciliation, the masters and men sitting upon this board, and

engaged in full and frank discussion, must be limited in number, and enjoy the confidence of those whom they represent. If there be a reference of the matter to arbitration, the arbitrator's award is not likely to be observed, unless the masters and men feel that their case has been fully set before him by their chosen advocates. If there be a sliding scale regulating wages according to changes in prices or some other factor, the basis of the scale must have been settled by conciliation or arbitration, and the decision of the committee of conciliation, equally with the award of the arbitrator, must find its ultimate sanction in the character of the representation of masters and men. If some fresh method, not yet perhaps discovered, be introduced for the peaceful settlement of industrial disputes, it is impossible to conceive that it will be able to dispense with the necessity of effective representation.

But then the question arises: How is this effective representation to be secured? So far as the employers are concerned, they are comparatively few in number, and the difficulty may therefore be said to lie rather on the side of the men. Even as regards them, however, the answer to the question is not far to seek. A trade union supplies the readiest and most effective means of securing this representation of the men; and it is at present at any rate the only effective means readily available. The authority of the leaders of an union, although it rests in many cases on a more democratic foundation than is sometimes supposed, and although, as we shall see later, it is on occasions disputed, is yet more likely than any other authority to secure the adherence of the general body of the men to the decision of a board of conciliation, to the award of an arbitrator, to the basis of a sliding scale. Mr. Burnett, in his report to the Board of Trade on the Strikes and Lock-outs of 1888, after noticing¹² the "considerable" extension "during the last twenty years of the methods of settling disputes by arbitration and conciliation," proceeds to add the remark that "these methods of arranging difficulties have only been made possible by organisation of the forces on both sides, and have, as it were, been gradually evolved from the general progress of the combination movement."¹³ The organised representation, then, of the men by means of a trade union is an elementary condition of the problem; and it is one which is, I think, gradually though it may be, winning its way to general recognition.

¹² P. 17.

¹³ In the "Newcastle Daily Chronicle" of the 1st January, 1887, it was stated with reference to the manufactured iron trade of the North of England, that the fact that many of the iron-workers were not union-men, made it more difficult to deal with them, and further organisation was urged on the ground that otherwise the board of conciliation and arbitration would become a "farce."

VI.—*The Position of Trades Unions.*

There are, indeed, few more striking changes than that which has passed over the general tone and temper of public opinion about the position and action of trades unions; and we may add that the more favourable light in which these bodies are now regarded by the general public, has been accompanied by an alteration in their own character. There are, of course, exceptions. There are still unions, generally perhaps of more recent formation and of smaller numbers, where violence of language is more conspicuous than moderation, and a desire for conflict is more often evinced than a wish for peaceful negotiation. And there are still individuals and classes of men who make no secret of their relentless and indiscriminating hostility to trades unions. But the general tone and temper of public opinion, and the general character of trades unions themselves, have undergone change. There is on the whole a greater belief in the capacity of legitimate organisation to ensure the peaceful and effective settlement of industrial disputes; and there is a stronger disposition on the part of this organisation itself to have recourse to negotiation, sometimes irregular and casual, sometimes of a regular and permanent character, in preference to engaging in actual conflict.

Mr. Burnett, in the report to which we have previously alluded, thinks¹⁴ that "so far as any conclusion can be arrived at"—and, he adds, "no absolutely definite judgment is possible"—"strikes are somewhat less frequent than they were from ten to twenty years ago, and are more readily brought to a conclusion"—a "result" which "has been largely due to the more general adoption of systems of reference to arbitration, of sliding scales," and of "mutual conciliation." "Within the last quarter of a century," he remarks,¹⁵ "a strong body of opinion has been growing up that these trade battles are neither necessary nor inevitable;" and, summarising¹⁶ the "suggestions" which have been made by employers in answer to an inquiry addressed to them with regard to the "best means of preventing or settling disputes," he says that the "general tendency of these suggestions is in the direction of peaceful modes of settlement, and a much less combative spirit is now manifested than used to prevail;" while the answers of the unions to the same question show that on this point they "are much more in harmony with employers than might have been anticipated." "In fact, the executive committees of all the chief unions are to a very large extent hostile to strikes, and exercise a restraining influence," and "of recent years the control of the central executives over

¹⁴ P. 36.¹⁵ P. 3.¹⁶ P. 41.

"strike movements has been gradually becoming more rigorous." "Many" unions "make a rule that in all cases where the initiative is taken by the men no strike can be entered upon except by a certain fixed proportionate vote of the whole organisation taken under the ballot."¹⁷

I have made these quotations from Mr. Burnett's report at some length, because they supply a fair illustration of the change which is passing over the character of trades unions, and the opinion of the general public regarding them. They show that while on the one hand trades unions undoubtedly furnish the most available means existing for effective representation of the men, on the other they are more disposed themselves, and are more likely to meet with the support of a friendly public opinion in giving practical effect to their inclination, to substitute peaceful negotiation for battle to the death. Mr. Bellamy in his popular novel "*Looking Backward*," regards¹⁸ the formation of "great labour organisations" on the one side as necessarily issuing in strikes against the "big corporations" on the other; but it is possible to conceive that the greater organisation may really prove to be the condition for more systematic and effective peaceful negotiation.

VII.—*The London Dock Strike.*

If the strike of the dock labourers in London be regarded from this point of view, it may assume a different aspect from that which it has seemed to some spectators to present. The strike has undoubtedly shown that it is possible for unskilled labourers to form and maintain an organisation; and this was a result which before the strike had not seemed to be possible. But, if organisation prove to be possible, not merely during the continuance of a struggle, but after the excitement of it is past, then it is also possible that, even where unskilled labourers are concerned, a permanent board of conciliation may, as Mr. Sydney Buxton points out in his preface to "*The Story of the Dockers' Strike*," be successfully established. That appears to be the characteristic of the strike which is most pregnant with consequence, and to distinguish it in an especial measure from previous disputes.

It is no new thing in industrial quarrels for public sympathy to be awakened; and there are few, if any, contests where public opinion is not a factor to be considered in favour of the one side or the other.¹⁹ Nor is it a new thing in industrial history for outsiders to intervene; and, when it is urged that in the case of

¹⁷ P. 7.

¹⁸ P. 40.

¹⁹ This is shown in more than one case in the list of the historical English strikes contained in Mr. Burnett's report, pp. 21—9.

the dock strike this intervention assumed the shape of advocacy rather than impartial arbitration, it must also in fairness be remembered that it is, as we have seen, an elementary condition of negotiation that the representatives of the one side should be willing to meet the representatives of the other, and that the dock directors are reported²⁰ to have stated on one occasion that they declined to meet any other leaders of the men than those in their own employment—a distinction which, if it were generally urged, would prevent that negotiation between employers and trades union officials which is the basis of amicable arrangement in other industries.

But it is a new thing in the history of industry that unskilled labour should have such support from skilled labour; and it is also a new thing that it should be able to combine.²¹ So new a thing indeed is it that we might naturally expect to find much more violence of speech, if not of action, and much greater irritation on either side than seem to have actually been the case. Mr. Norwood's injudicious language, as I venture to regard it, and the Strike Committee's issue of the manifesto for a general suspension of work in London, might, I suspect, be easily paralleled by incidents in the early history of organisation among skilled labourers.²² The infancy of an union may be characterised by excesses of which it would be ashamed when it reaches maturity; but, although that possibility should steadily be kept in mind when we are considering the movements which have recently taken place among unskilled labourers, it does not vitiate the conclusion that organisation is a necessary preliminary to the peaceful settlement of industrial disputes.

The prominence, then, which attaches at the present moment to the subject of industrial disputes may be said to carry with it the advantages we have noticed. It disposes men to seek for some practicable means of peaceful arrangement; it attracts attention to the successful experiments of the past; it impresses on the public mind some of the elementary conditions of the problem. For these three reasons we might conclude—and the conclusion would undoubtedly be in a large measure correct—that at the present time the position of industrial conciliation was one of advantage, and that its prospects for the future were encouraging. But we must not neglect to notice some considerations which bear on the other side; for there are disadvantages, as well as advantages, attaching to the prominence of the subject.

²⁰ See "The Story of the Dockers' Strike," by H. Llewellyn Smith and Vaughan Nash, p. 126.

²¹ See the present writer's former paper, p. 15.

²² See the table in Mr. Burnett's report referred to above.

VIII.—*Disadvantages of the Present Position.*

It is true that at such a time a general interest in the matter is aroused, and attention is given to previous experiments; but that interest sometimes leads to hasty conclusions and to a hurried examination of detail. The experiments of the past are studied indeed; but they are studied in their broad outlines, and men are too impatient for action to devote much time to preliminary reflection. They are inclined to think that what has been applied with success to one industry can be immediately applied to another, without any consideration of those differences of detail which more prolonged and exhaustive examination might show that it was expedient to make. They are prone to rest content with the fact of success without inquiring into the elements which have contributed to produce it. And so they incur a risk of failure which they might have avoided had the times been less excited, and the interest in the subject less general—had they in fact been able to spend some while in patient study and calm reflection.

It is true, again, that at such a time the tone and temper of employers and employed, and of the public generally, is in some respects such as to favour the trial of methods of industrial conciliation. There is undoubtedly a serious desire that these methods should meet with success, and that very fact conduces to the attainment of the result which is desired; for the tone and temper of masters and men in such matters is, as we shall see, beyond all comparison more important than the particular character or details of the form of conciliation adopted. But, on the other hand, men are inclined also at such a time to entertain extravagant expectations of the results to be achieved, and to exhibit a corresponding disappointment if their hopes are not fully realised. They forget that the success of all such arrangements depends, it is true, to a large extent, on the merits or demerits of the system adopted, but depends to a far greater extent on the changeable disposition of the human agents who bring it into operation. There is a moral factor in the problem which you cannot eliminate; there is the element of human nature with which you must reckon. The most admirable mechanism that human ingenuity can devise for the settlement of industrial quarrels, can never escape the liability to break down on occasions under the strain put upon it by the incalculable caprices of human nature.

But the moral to be drawn is not to abandon the mechanism in despair, but to improve and amend it, and to keep within reasonable bounds the hopes based upon it. We must remember that there may be occasions when the tone and the temper of employers and employed is such that they will be too impatient

to wait for the results which would in due time follow from the automatic operation of a sliding scale. They desire, as the case may be, an immediate advance or reduction of wages; and they know that in the nature of things there must be an interval of time under the scale between the changes in prices and the consequent changes in wages. Or they hold that the basis of the scale is unfair, and that the conditions of trade have altered so much, that an arrangement grounded on a previous state of affairs is inapplicable to the present; and here once more they know that in the nature of things a scale can be constructed with a capability of adaptation only to changes of a limited extent, and that the arrangement of a fresh basis cannot be effected without some delay. Or again they are too impatient to wait for the reference of the matter in dispute to an arbitrator, or too convinced of the righteousness of their own cause, and the incurable deficiencies of their opponents' contentions, to be ready to submit to the decision of a third and neutral person, or to believe in his neutrality if he decides against them. Or once more, they may be too suspicious of one another to be even willing to meet for full and frank discussion across a table; or, if they are ready to meet, on occasions too estranged in feeling to arrive at any agreement. Or lastly, it may not be possible to induce them to enter even into irregular negotiations. All these contingencies may arise to hinder the working of the most perfect mechanism of industrial conciliation; and the failure to recognise them leads at once to extravagant hope and irrational despair.

IX.—*The Northumberland Coal Trade.*

In my former paper I selected as an illustration of what I ventured to distinguish as the third and most advanced stage of industrial conciliation the sliding scales existing in the coal and iron mining industries, and I devoted especial attention to those in operation in the coal trades of Durham and Northumberland. At the time when I was writing it seemed as if the peaceful settlement of industrial quarrels had been finally substituted in the latter county for the barbarous antiquated methods of strikes and lock-outs. It appeared as if there at any rate industrial peace was established on a firm basis, and the third and most advanced stage²³ of conciliation had been permanently attained, and had approved itself to masters and men. For upwards of ten years there had been no general strike in the Northumberland coal

²³ With regard to this trade, Mr. Burnett remarks in his report (p. 18) that "organisation among the men has led on occasions of difference to negotiation, "negotiation has led to conciliation, conciliation has led to arbitration, and arbitration to the formation of a sliding scale which has almost automatically adjusted "wages."

trade, and since 1873 a joint committee of masters and men had successfully adjusted more than 3,000 local disputes affecting particular mines.

During the interval, however, which elapsed between the preparation and the reading of my paper, the employers gave notice of their intention to terminate the sliding scale at the end of the year, and to claim a reduction of 15 per cent. in wages. With the close of the year accordingly the sliding scale, which had been originally established in 1879, and had been revised in 1883, came to an end. The men, however, at once held a meeting and appointed a committee to negotiate with the employers. Their object was, as they expressed it, to secure the advantages of arbitration, and to avoid the delay and expense which it usually entailed; but they did not entrust the committee with full but only limited powers of negotiation. They might make certain concessions to the masters, but any arrangement which exceeded that limit was to be referred to the different lodges for confirmation or rejection. The conference between the representatives of the masters and men was held with little delay, and the question of dispute was brought within such a narrow compass that the masters asked for a reduction of $12\frac{1}{2}$ per cent., and the men proposed a reduction of 10 per cent.; and the proceedings, according to a newspaper report, were characterised by an entire absence of acerbity." The representatives of the men agreed to submit to their constituents the question of the acceptance or rejection of the masters' terms; but a meeting of delegates, which was immediately held, determined upon a strike by a large majority; and, when ballot papers had been issued to the different lodges, the result of the voting showed that the requisite majority of two-thirds were in favour of a strike. Accordingly it commenced, and continued until the end of May, when the masters' terms were accepted by the men.

More than once during the intervening period proposals of a conciliatory nature were submitted to the votes of the men, but without success. At the beginning of February, on the instance of Mr. John Morley, a proposal, the general aim of which was the resumption on a more likely basis of negotiations with the masters, was rejected by more than the necessary two-thirds majority. In the middle of March a proposal for submitting the question to arbitration, which seemed to the executive committee of the union, from the reports that had reached them from several collieries, to be likely to meet with a favourable response, was negatived by a large majority. In the middle of the following month a clear majority was still in favour of continuing the strike; and it was not until the beginning of May that the men were willing to

submit the matter to arbitration—a course which the masters declined to entertain—and only in the third week of the month did a committee receive full powers to re-open negotiations and effect a settlement.

The strike was closed by the acceptance of the masters' terms; a reduction of $12\frac{1}{2}$ per cent. in wages was made, and a new sliding scale established, with the standard price of 4s. 7d. instead of the old price of 4s. 8d. In November, however, at a meeting of the delegates of the men, a resolution was passed to terminate this new scale at the end of the year; and, between that date and the end of 1889, five advances of wages, amounting altogether to some 37 per cent., have been obtained by means of negotiations between the representatives of the workmen and the general body of the owners, but no arrangement of a more permanent character, such as a sliding scale, has been re-established.

The account I have just given would at first sight appear to be very discouraging. Just as the history of the Board of Conciliation and Arbitration in the Manufactured Iron Trade of the North of England would seem to show the possibility of overcoming any difficulties that can well be conceived, so the history of the abandonment of the sliding scale in the Northumberland coal trade would appear to indicate the possibility of failure at the very moment when success seemed to be fully assured. The one illustrates the manner in which progress may be made, the other exemplifies the ease with which the results of progress may be lost. And it is useless, or rather it is worse than useless, it is positively mischievous, to refuse to recognise the fact. There is much that is undoubtedly discouraging in the circumstances we have briefly reviewed.²⁴

X.—*The Sliding Scale.*

They seem to show in the first place that a sliding scale is liable to occasion dissatisfaction at periods of rapid and extensive fluctuations in prices. For, while the close of the strike was followed by the establishment of a new scale, that scale was terminated by the men at the earliest opportunity; and in November, 1888, when the question of the re-introduction of the system was raised, the men objected to entertain the proposal for the present. Mr. Ralph Young, of the Northumberland Miners' Mutual Confident Association, has kindly furnished me with an account of the Northumberland coal trade from the determination of the 1887 scale until December, 1889. He expresses, it is true, the opinion that, if the scale which was terminated in 1886 had continued in force, it would "have been better for both employers and men;" but he also thinks that the account which he gives

²⁴ See Appendix F.

indicates that the scale would not have "worked quickly enough." He furnishes a list of the dates and amounts of the successive advances in wages since the termination of the 1887 scale, with the average prices realised at the time. The list runs as follows:—

Date.	Average Price.	Advance.
November, 1888.....	4s. 4·82d.	5 per cent.
February, '89.....	4s. 9·67d.	7½ „
June, '89.....	5s. 4·09d.	7 „
(2 per cent. not to be paid till a month after)		
September, 1889.....	5s. 7·34d.	3 per cent.
December, '89.....	5s. 9d. to 5s. 10d.	10 „

For the three months ending November, 1886, immediately previous to the abandonment of the 1883 scale, the average realised price was, he states, 4s. 6·73d. For the three months ending February, 1888, it was 4s. 3·40d.; for the three months ending May, 4s. 3·21d.; for the three months ending August, 4s. 4·60d.; for the the months ending November 4s. 4·82d. as above. The fall in price thus indicated was, he thinks, very probably "caused by the "attempt to regain the trade lost through the strike," and on that assumption the reduction in wages which was effected, and which did not exceed 3d. or 3½d. per ton, meant that the employers "lost "just about as much in price as they gained from the reduction in "wages." Had therefore "no change taken place in prices or "wages," they "would have been in the same position from the "end of 1886 to February, 1889, as they found themselves with the "loss in price equal to what they gained from wages." "In "February, 1889," he proceeds to observe, "the amount taken "from wages in May, 1887, was restored to the workmen. The "scale would have given the same. In June 5 per cent. more was "given when the price was 5s. 4d.; the scale would have given "exactly the same amount. In July 2 per cent. more was given. "and in September another 3 per cent., when the price was "5s. 7·34d. Had the scale been in operation only 1¼ per cent. of "this last 3 per cent. would have been due, and if the price at the "end of December was, say, only 5s. 9½d., as I have no doubt it "was, the further advance of 10 per cent. given, to commence on "the 29th December, exceeds by 9½ per cent. the amount the "scale would have given." This "excess" is, he argues, partly due to the fact that the "strike drove a large number of workmen "out of the county into the neighbouring county, Durham, where "the work is much easier, and the wages were 2d. a day higher "than in Northumberland after the reduction," and the "employers "were anxious to give whatever they fairly could to induce those "men to return." But the excess was also due to the fact that the

"scale would not have worked quickly enough." It is "almost certain," he believes, "that the average price realised at the moment when the last 10 per cent. given came into force, viz., the 29th December, would have been quite equal to what it would have been required to be under the late scale for it to give the same advance." But the "impatience of the men would not allow a scale to run for any length of time in a state of trade like that we are having just now, unless means are devised for obtaining as nearly as possible the average selling price up to date."

I have given this quotation at length from Mr. Young's letter, because it seems to me to indicate very forcibly the chief point in which a scale may be liable to fail. It shows not only that the disposition and the expectation of masters and men may be such as to lead them to abandon an arrangement from which they would ultimately have derived more benefit than that which they have secured at greater cost, but also that in seasons of rapid fluctuation of trade, even if the basis of a scale be acknowledged as fair, the interval between the changes in prices and the consequent changes in wages may seem to be too long for natural impatience to wait. In the end no doubt the scale would work equitably for both masters and men; but at the present it seems to favour unduly the one side or the other, and it requires a mental effort and an act of imaginative foresight to recognise the ultimate and not merely the immediate effects. The septennial average of the Tithe Commutation Act presents an instructive parallel. At a time of agricultural depression the tithe-payer finds it hard to believe that he is not unfairly treated, while the tithe-owner might experience the very same feelings at a time of reviving prosperity. The chief feature, in fact, of the brief history of sliding scales has been a desire to reduce the interval between the changes in prices and the consequent changes in wages to as small a compass as is possible; but some such interval there must necessarily be, and in this necessity we may perhaps go some way to discover an explanation of the undoubted fact that in the coal trade during the past few years, when it is scarcely extravagant to say that prices have advanced by leaps and by bounds, sliding scales have fallen into disrepute.

XI.—*The Authority of Trades Unions Officials.*

The recent history of the Northumberland coal trade, however, is more discouraging on another account. It shows in a very significant manner that when we have secured effective representation, as it would seem, of the men through the organisation of a trade union, it is still possible that the counsel of the leaders may be rejected by their constituents. There can be little, if any,

doubt in the case of the Northumberland coal trade, that the leaders were averse to the strike; and there can also be little, if any, doubt that considerable irritation was felt and evinced regarding their attitude by many of the men themselves. On one occasion, in fact, during the strike the officials of the union offered to resign their position; and, although this offer was declined, indications of continued resentment were manifested in more than one way. It was not until the very close of the strike that the representatives of the men were invested with full powers of negotiation; and some time after it was over the miners absolutely refused to grant a hearing at their Gala Meeting to one of their number who was known to have advocated arbitration at an early stage of the dispute. The question of continuing the payment of the salaries of Messrs. Burt and Fenwick as members of parliament was submitted in August, 1887, to the votes of the different lodges, and decided in the negative; and, although the decision was rescinded at the annual meeting of delegates in the following December, the question was only determined in the affirmative by a majority of 300 votes in the April of the succeeding year.

Such then are the discouraging features—and I have not attempted to minimise them—of the recent history of the Northumberland coal trade. There are, however, one or two considerations of importance which should be stated on the other side. In the first place, at the conclusion of the strike a local newspaper remarked²⁵ that there had been no “extravagance” or “violence” throughout it. There had even been no attempt on the side of the owners to evict the men from the houses, which were in some instances provided as part of their wages. In the second place, throughout the struggle the representatives of either side were ready to meet one another for purposes of negotiation; and the question of the declaration of the strike itself was formally submitted in an open and regular manner to the decision of the general body of the men, and, according to the rules of the union, could only be determined by a two-thirds majority. In the third place, although the system of the sliding scale has fallen into disuse since 1887, yet the five successive advances in wages between that date and the end of 1889 have been obtained as the result of open negotiation between masters and men, the Joint Committee has continued in existence for the adjustment of local disputes, and the Northumberland miners have abstained from taking part in the recent coal strikes. These considerations do seem to show that all the work of previous years has not been thrown away, and that the disuse of the advanced form of the sliding scale has not carried

²⁵ See “Newcastle Daily Chronicle,” 25th May, 1887.

with it the entire rejection of the methods, and the total abandonment of the spirit, of industrial conciliation.

XII.—*Conclusion*.

And thus we are led to consider the real nature of the claim which may properly be advanced in its behalf. It cannot claim to be a panacea. It cannot pretend to do away with all occasion for strife. It cannot maintain that by its adoption a complete and radical change is effected in human nature. It can merely put itself forward as an advantageous and reasonable alternative to strikes and lock-outs, which may commend itself to sensible men as a practicable means of adjusting disputed questions with tolerable assurance of success under fairly ordinary circumstances. It must allow that it is liable to failure, it must admit that it has on occasions failed. But in that it may contend that it is only subject to conditions which attach to all human schemes and proposals, and that a careful analysis might reveal liability to failure even in the more advanced systems, as they seem, of profit-sharing or co-operative production.

It can point to instances where it has succeeded in the face of most serious difficulties, and to the undoubted advantages which have followed upon its successful adoption. It can maintain that men are more likely to be conciliatory when they have met one another—in irregular negotiations, it may be—than when they have not; that the existence of a regular board of conciliation or court of arbitration establishes a presumption in favour of amicable arrangement; that at such a board either side may learn to recognise the merits and appreciate the difficulties of the other, and at such a court to furnish arguments, and not merely force, in support of its case, and to admit that it may itself be possibly biassed in judgment; and that the automatic mechanism of a sliding scale tends, where it is feasible, to lessen the frequency of occasions for dispute. These are considerable advantages, and it is worth running the risk of failure to attempt to secure them.

Failure, it is true, disheartens; and progress sometimes seems to be terribly slow. But it is better to advance by gradual stages, than by a sudden and extensive change to incur the risk of the likelihood, if not the certainty, of reaction. Of recent years there has, I think, been progress in the matter of industrial conciliation. The sliding scale may be regarded with disfavour in the coal industry, but it is in operation in the iron industry. There may be cases, as at Nottingham, where boards of conciliation have been for a time at least dissolved; but there are others, as in the engineering trade on the Tyne, where there seems to be a fair prospect of their introduction; or as in the boot and shoe trade, where they have

actually been introduced. There may be instances, as in the recent coal strike, of a refusal to submit to arbitration, but the dispute in the coal trade promised to leave behind it the establishment of some permanent means of arranging wages questions.²⁶

There has then, I venture to think, been undoubted progress: and, if I have laid stress on some discouraging circumstances, I have done so because I am sensible of the great importance, at a time when the matter is receiving some considerable attention, of forming a clear idea of what we may, and of what we must not expect. We may expect that industrial conciliation will bring about an improvement in the relations of employers and employed; we must not expect that it will effect a radical change in human nature. The history of the manufactured iron trade of the north of England shows us what we may, the recent history of the Northumberland coal trade what we must not expect. In the enthusiasm which the former may arouse, we should not ignore the moderating reflections suggested by the latter; in the despondency which the latter may awaken, we ought not to overlook the encouragement afforded by the former:—

“ For some cry ‘Quick,’ and some cry ‘Slow,’
But, while the hills remain,
Up hill ‘Too-slow’ will need the whip,
Down hill ‘Too-quick’ the chain.”

²⁶ This has taken the form merely of arrangements for negotiation, and not of a wages board or a sliding scale.

APPENDIX A.

The Belgian Conseils de Prud'hommes.

For the evidence to which allusion is made in the text, the "Procès-Verbaux des Séances d'Enquête concernant le Travail Industriel," vol. ii, A 915, B 50, b 933, D 119, should be consulted. E 393 contains the statement of the witness mentioned later in the text. In E, p. 63, annexe viii, the resolutions passed at a congress of *conseils de prud'hommes* at Charleroi are given, and included among the reforms indicated as desirable, we find the creation of councils of arbitration for bringing to an amicable conclusion the differences which have "occasioned so many disastrous strikes." In b 1628 the details are furnished of a proposal for a *conseil d'arbitral*, suggested by a M. Oyer, who commences his account with the words: "L'expérience ayant démontré l'incompétence et l'insuffisance des conseils de prud'hommes." Complaints appear to be raised by the Belgian workmen about the constitution of the *conseils de prud'hommes* on the ground that they are not represented in them by members of their own class, but by foremen whose interests lie on the side of the masters.

APPENDIX B.

State Conciliation and Arbitration in Foreign Countries.

I. *France*.—In France, as in Belgium, the elections to the *conseils* seem to have been prejudicially affected by political considerations. In the former country a recent alteration in the law, providing that either the president or the vice-president should be a workman, seems to have been followed in some cases by the secession of the employers, when they found that they no longer enjoyed in every event the advantage of the casting-vote of the presiding official; and the quorum necessary to constitute the *conseils* has had to be reduced to meet the consequences of this secession by a fresh law.

II. *Denmark*.—The Danish courts of conciliation, like the French and Belgian *conseils*, apparently deal with dissensions between servants and labourers and their employers. Professor Schurling, in a letter addressed to Sir R. W. Rawson, to whose kindness I owe

the opportunity of seeing it, states that conciliation as conducted through the agency of these courts is found to be a very summary and cheap mode of procedure. As a general rule, he says, conciliation is to be tried either by means of a special commission or by the court itself. In many instances both parties are in agreement about the facts, but the debtor is unable to pay owing to the pressure of other creditors, and in such cases the verdict of a commission possesses the same significance as the verdict of the court, and can be executed in the same way. The courts have been in existence for some considerable time, and appear to have been very successful.

III. *The United States of America*.—In the "Times" newspaper of the 18th April last, an abstract is given of the report for 1889 of the Massachusetts Board of Arbitration. This board was created by the State Legislature in 1888 for the settlement of differences between employers and workmen. It is composed of three members, one of whom must be an employer selected by the Governor of the State from an association representing employers, one a workman selected by the Governor from a labour organisation, and the third member of the board is to be appointed on the recommendation of the other two, or, in the event of their failure to agree, by the Governor himself. The board determines upon its own rules and procedure, subject to the Governor's approval. It intervenes in industrial quarrels when application is made to it, and it advises what course should be taken. It has no power to enforce its decision, but its judgment is nominally binding upon the parties who have joined in the application for a period of six months, or until three months subsequent to the giving of notice by either party of an intention not to be bound further. The board also plays the part of a voluntary mediator, and in 1889 it intervened in twenty-six disputes, involving yearly wages to the amount of some three-quarters of a million pounds, and total earnings to the amount of over two millions. In the majority of instances its decision is accepted; but it has proved unable to avert a crisis in the most serious cases. Minor cases have been adjusted with little difficulty, and the board has been frequently asked to draw up scales of wages. Its members are paid; and its total cost is about 1,800*l.* a year. It has unquestionably, the report states, effected considerable good, and the masters and the men have become more moderate in their demands, and more reasonable in their attitude and action, since its establishment.

The objections which may be raised to the introduction into England of industrial arbitration with a legal sanction are stated in the present writer's "Industrial Peace," pp. 30—37. These objections would attach to a Bill laid before the House of

Commons in the present session for the establishment of compulsory conciliation.

APPENDIX C.

Strikes in France.

M. Turquan, who obtains his figures from the 15th volume of the French Annual Statistics, gives the number of strikes for each separate year as follows:—

1874, 21; 1875, 27; 1876, 50; 1877, 30; 1878, 34; 1879, 53;
1880, 65; 1882, 182; 1883, 144; 1884, 90; 1885, 108.

For the earlier years of the series the returns are, he remarks, incomplete; and for 1881 they are so incomplete as to be useless. A detailed examination of them brings to light some interesting facts. Strikes appear to be more frequent at the beginning of the year, in the months of March, April, and May; and of the strikes enumerated 5 were caused by the retention of some part of wages for the purpose of insurance against accidents, 1 by a similar retention for the purpose of provision against old age, and 1 followed upon the establishment of a co-operative distributive society, 39 per cent. of the total number occurred in the textile industries; and of the 753 of which the results were known, 206, or 26 per cent., ended in favour of the men, 427, or 57 per cent., in favour of the masters, and in 120 cases, or 16 per cent., mutual concessions were made. In some exceptional instances subsidies were voted to the strikers by the municipalities.

APPENDIX D.

Continental and American Strikes.

For the use of the epithet, to which reference is made in the text, the reader should consult the reports from the consuls of the United States of America, *Strikes and Factory Operatives in Germany*, No. 74, February, 1887. The remark was made by the American consul at Mayence.

In a similar collection of reports on *Protective Measures in the Interest of Workmen in Germany*, No. 76, April, 1887, the consul at Crefeld states that strikes "are of rare occurrence." If a strike does take place, he remarks, it is usually confined to a single establishment and a single day. The fact is that the operatives cannot "afford" to strike. Their earnings are so small that savings

are impossible, and they have no means with which to support a strike.

In Mr. Burnett's report to the Board of Trade on the Strikes and Lock-outs of 1888, to which allusion is made later in the text, the author refers (p. 5) to a very full enumeration of the strikes during the six years 1881-86 in the United States of America, which is contained in the Third Annual Report (1887) of the Commissioner of Labour. Mr. Burnett describes (Appendix II) this statistical enumeration as "by far the largest work ever undertaken on this subject." The total number of strikes in the six years amounted to 3,902, rising by a sudden increase from 645 in 1885 to 1,411 in 1886.

APPENDIX E.

The Conciliation Scheme of the London Chamber of Commerce.

The scheme put forward by the London Chamber of Commerce is here subjoined:—

"Further Report of the Labour Conciliation Committee to the Council of the London Chamber of Commerce.

"Your committee has endeavoured to devise some practical methods for carrying out the scheme contained in the interim report provisionally adopted by the council on the 12th of December.

"The committee offers the following suggestions:—

"I. That a permanent body be constituted, to be called 'The London Conciliation Board,' which shall be affiliated to the London Chamber of Commerce, and that its composition shall be as follows, viz.:—

"(a.) Twelve members representing capital or employers, to be elected by the council of the Chamber.

"(b.) Twelve members representing labour, to be elected by the employed.

"(c.) To these shall be added representatives from the separate Trade Conciliation Committees as hereinafter referred to.

"(d.) The body thus constituted shall add to their number six other members, who from their position, authority, or experience may be useful in promoting the objects of the London Conciliation Board; three to be appointed by the labour representatives on the Board, and three by the representatives of capital.

"(e.) Four members, viz., the Lord Mayor of London, or some member of the Corporation to be nominated by him; the chair-

“ man of the London County Council, or some member of the
“ Council to be nominated by him; a representative of the London
“ Trades Council, and a representative of a London labour orga-
“ nisation to be selected by the labour representatives on the
“ Board.

“ The elections shall take place every three years, and the first
“ election shall take place on the——

“ II. The duties of the London Conciliation Board shall be as
“ follows:—

“ (a.) To promote amicable methods of settling labour disputes
“ and the prevention of strikes and lock-outs generally, and also
“ especially in the following methods:—

“ 1. They shall, in the first instance, invite both parties to
“ the dispute to a friendly conference with each other, offering
“ the rooms of the Chamber of Commerce as a convenient
“ place of meeting. Members of the committee can be present
“ at this conference, or otherwise, at the pleasure of the dis-
“ putants.

“ 2. In the event of the disputants not being able to arrive at
“ a settlement between themselves, they shall be invited to lay
“ their respective cases before the committee, with a view to
“ receiving their advice, mediation, or assistance. Or, should the
“ disputants prefer it, the committee would assist them in selecting
“ arbitrators to whom the questions at issue might be submitted
“ for decision.

“ 3. The utmost efforts of the committee shall, in the mean-
“ time and in all cases, be exerted to prevent, if possible, the
“ occurrence or continuance of a strike or lock-out until after all
“ attempts at conciliation shall have been exhausted.

“ The London Conciliation Board shall not constitute itself a
“ body of arbitrators except at the express desire of both parties
“ to a dispute, to be signified in writing, but shall in preference,
“ should other methods of conciliation fail, offer to assist the
“ disputants in the selection of arbitrators chosen either from its
“ own body or otherwise. Any dispute coming before the board
“ shall, in the first instance, be referred to a conciliation com-
“ mittee of the particular trade to which the disputants belong,
“ should such a committee have been formed and affiliated to the
“ Chamber.

“ (b.) To collect information as to the wages paid and other
“ conditions of labour prevailing in other places where trades or
“ industries similar to those of London are carried on, and especially
“ as regards localities either in the United Kingdom or abroad
“ where there is competition with the trade of London. Such
“ information shall be especially placed at the disposal of any

“disputants who may seek the assistance of the London Conciliation Board.

“III. The separate Trade Conciliation Committees shall be composed of equal numbers of employers and of employed.

“Each trade shall elect its own representatives, employers and employed voting separately for the election of their respective representatives. The number of members and the general rules of procedure shall be determined by each particular trade, subject to the approval of the London Conciliation Board.

“The Trade Conciliation Committees shall be affiliated to the London Chamber of Commerce, and shall be represented upon the London Conciliation Board. Any Trade Conciliation Committee constituted as above, representing a body or trade in the metropolitan districts of more than 1,000 individuals, shall send two representatives to sit on the London Conciliation Board, one being an employer, and the other an operative workman, each to be separately elected by employers and employed respectively. In the case of Trade Conciliation Committees representing bodies or trades in the metropolitan districts smaller in number than 1,000 individuals, two or more such committees may unite together to elect joint representatives to the London Conciliation Board.

“It shall be the duty of the Trade Conciliation Committees to discuss matters of contention in their respective trades; to endeavour amicably to arrange the same, and in general to promote the interests of their trade by discussion and mutual agreement. In the event of their not being able to arrange any particular dispute, they will refer the same to the London Conciliation Board, and in the meantime use their most strenuous endeavours to prevent any strike or lock-out until after the London Conciliation Board shall have exhausted all reasonable means of settlement.

“They may from time to time consider and report to the London Conciliation Board upon any matter affecting the interests of their particular trade upon which it may be thought desirable to employ the action or influence of the London Chamber of Commerce as a body.

“IV. The London Chamber of Commerce places its rooms at the disposition of the London Conciliation Board and of the Trade Conciliation Committees for holding their meetings. Any alterations in the rules and regulations of these bodies which may be from time to time proposed shall be submitted for approval to the council of the Chamber.

“V. The above regulations shall be subject to bye-laws to be specially framed for the purpose, and which shall be open to

amendment as required from time to time, on agreement between the council of the Chamber of Commerce and the London Conciliation Board.

“ His Eminence Cardinal Manning,
 “ The Right Hon. Sir Henry Isaacs (Lord
 “ Mayor of London),
 “ Sir John Lubbock, Bart., M.P.,
 “ Sir Albert Rollit, M.P.,
 “ Sir James Whitehead, Bart.,
 “ Sir Vincent Kennett-Barrington,
 “ R. K. Causton, Esq., M.P.,
 “ Samuel Montagu, Esq., M.P.,
 “ S. B. Boulton, Esq. (Chairman),
 “ H. O. Arnold-Forster, Esq.,
 “ E. H. Carbutt, Esq., and
 “ Kenric B. Murray (Secretary),

Members
 of the
 Committee.

“ January 31st, 1890.

“ *Explanatory Circular.*

“ The council has had particularly in view the necessity of giving capital and labour an equal representation, and equal voting power in the organisation of the proposed London Conciliation Board and Committees.

“ Attention is specially called to the fact that this Board will not in itself be primarily or of necessity an arbitrating body, but its main object will be to bring the interested parties together for purposes of discussion and explanation at the earliest stage of any difficulty, with the view of preventing that difficulty reaching the acute stage of strike or lock-out, arbitration being only suggested in the last resort. It is hoped that the existence of a permanent Board composed of experienced and influential representatives of both capital and labour, to whom any difficulty arising in the labour market can be referred for discussion and consideration at an early period, may, by intervention in a friendly and disinterested manner, enable points of difference to be settled by mutual consent without any stoppage of trade. Should the difficulty, however, prove to be acute, or not one of a nature for settlement on general grounds, the Board will have powers to assist the disputants in nominating special arbitrators. One very important function of the Board will be to assist in promoting the formation of separate Trade Conciliation Committees for the various industries carried on in the metropolis, to whom all disputes affecting those particular industries will in the first instance be referred.”

APPENDIX F.

The Councils of Conciliation and Arbitration at Mariemont.

In the "Journal des Économistes" for May, 1889, an interesting account is given (p. 181) of a strike which occurred not long before at Mariemont, and which might at first sight appear to have shown the uselessness of conciliation. In one respect at least this strike may be said to present a parallel to that in the Northumberland coal trade. In the case of the latter, if we may believe the statements of the local press, discontent with the attitude and action of their leaders seems to have been fomented amongst the miners, if it was not actually set on foot, by socialist agitators; and in a somewhat similar fashion the writer of the account in the French Journal traces the origin of the mischief at Mariemont to the extreme socialist party in Belgium. The socialist party, he says, divided into two sections during a strike which occurred in the district in 1887, the one party consisting of the adherents of order, who sought to reach their goal by peaceful evolution, the other party aiming at revolution by means of a general strike. The strike of 1887 had been fomented by this extreme section, but had proved abortive; and in consequence of this the section had been enfeebled. And so in 1888 a plan was concerted for its resuscitation by means of a general strike to commence at Mariemont.

Here there were two coal-mining companies, with councils of conciliation and arbitration. In April, 1888, a demand for an advance of wages was made on the ground of a revival of trade. The management of the mines accepted the claim in principle, but postponed giving effect to it until the revival had really taken place. The trade-papers, however, with natural exaggeration represented the revival as an accomplished fact; and their language was copied by the labour-organs. A fresh demand was submitted to the councils of conciliation and arbitration for an advance of 10 per cent. The representatives of the workmen declared that they could not contend much longer with the current of opinion among their constituents; the moderate socialists urged the immediate concession of the advance; and half the amount claimed was granted by the management, although the average selling price had fallen during the previous month. The labour representatives were delighted, and the meeting was immediately dissolved in order that the news might at once be made public.

There were, however, certain details involved in the application of the advance to certain classes of the men, and in this circumstance the extreme anarchist journals found their oppor-

tunity. They declared that the men had been betrayed by their representatives, who were, together with their equals, alone to benefit by the advance. An agitation was started, meetings were held, delegates were sent from other districts to say that they were only waiting for the signal to be given from Mariemont to strike. An advance of 20 per cent. was demanded, and the councils of arbitration hastily assembled. The men's representatives declared that they were unable to cope with the misapprehension abroad, and asked the representatives of the management to come with them, and state the truth at the pit-mouth. Preparations were made for this, but unfortunately delayed; and on the morrow of the meeting the strike broke out at one place, and spread to others.

At first it seemed as if the councils had proved a failure; but in a few days work was resumed without any disturbance of the peace. The truth of the case was this, that the leaders of the men had not yet acquired complete ascendancy over them, and that time, with its educating influences, was needed before the councils would work with perfect harmony and prevent even temporary disturbance. As it was, though the anarchist party had grown desperate, threatening dynamite and practising intimidation, yet it had found it impossible to re-kindle the dying embers of the strike. The councils had really passed through the most serious crisis with but two or three days' suspension of work, and had during the first year of existence settled questions connected with the advance of wages, the reduction of the hours of labour, and the adoption of regulations regarding penalties and fines on the men for breaches of rule, by means of discussions which were courteously conducted. What was needed, concludes the writer of the account, was a strong union; it was, as the president said at the first meeting after the strike, necessary to increase the influence of the representatives of the men by the promotion of organisation among them.

DISCUSSION *on* MR. PRICE'S PAPER.

BEFORE the paper was read :—

The CHAIRMAN, Sir Rawson W. Rawson, in introducing the lecturer, said it would be remembered that they were indebted to Mr. Price for two valuable papers, the first upon the condition of the miners in the north of England (particularly in the county of Northumberland), and the second upon the condition of the same class in Cornwall. Mr. Price had spent a long time in each of those counties, and devoted much study to the questions of wages and the relations of master and labourer. His (Mr. Price's) papers were amongst those of the highest value in the Society's *Journal*, and he had now drawn up a paper on the position and prospects of industrial conciliation, the main object of which was to present not so much a statistical statement of results (because the subject did not admit of that), as his views on arbitration and conciliation boards. He (the Chairman) had not had the advantage of reading the paper beforehand, being unaware that he should have the honour of presiding that evening, but he hoped Mr. Price would be able to indicate something of the method in which industrial conciliation could be carried out. At all events, the paper would afford an opportunity for members and visitors to offer their opinions on the subject. He trusted the quality of the discussion would not be inferior to the discussions which had taken place on recent papers, and that the result would be to forward the object all—particularly economists and statisticians—must have in view, that of promoting some method of industrial conciliation which would do away with the grievous consequences of differences between the employers and the employed.

The paper was then read.

Mr. SYDNEY BUXTON, M.P., who was called upon by the Chairman first to address the members, thought they were very much indebted to Mr. Price for the very valuable paper he had contributed to a subject which at the present time was unquestionably of the utmost importance in connection with labour disputes. The advantage of preventing these disputes by means of conciliation rather than by strikes, need not be urged. Everyone was agreed that the only question was, what was the best mode in which these boards of conciliation were to be carried out? In Mr. Price's paper something was said about the so-called "Committee of Conciliation" at the time of the dock strike, of which he (Mr. Buxton) had the honour of being a member. It ought never to have been necessary to bring such a committee into existence; it was a form of conciliation which none of them desired; for it ought not to be necessary. All the same, he was bound to say that at the time it was necessary that some conciliation committee of that kind should be formed to

bring that particular dispute to an end. The form of conciliation committee they wanted was one that would prevent disputes, not one that would bring them to an end after they had been begun. It seemed to him that the only form in which conciliation committees could be successful, was when they were formed in each particular trade between the masters and men of that particular trade. He most cordially agreed with what Mr. Price had said in reference to trades unions. It was idle to talk of labour disputes being settled by means of conciliation rather than by strikes, unless there was on the one hand a strong trades union of the particular trade with regard to which the dispute arose, and on the other a combination among the masters themselves. From what he knew of the attitude of the men, they were as anxious that the masters should form trade unions amongst themselves as they (the men) were anxious to form them amongst themselves; because they felt that when there was a strong representative body on each side—both feeling their very heavy responsibility—who could meet round a table, to give and take when necessary, satisfactory negotiation was infinitely more likely to occur under such circumstances than if on the side of the men there were a few irresponsible individuals, and on the other side an isolated master. Everyone hailed with great gratification the vast extension which had taken place in trades unions since last summer's strike. Some of them would perhaps not last, but a vast number of them were day by day gaining strength, knowledge, and intelligence, and improving the position of the men and of trade generally. The real feature of the labour question at the present moment was that this was the first time the unskilled labour had combined together successfully in these trades unions; and these trades unions were quite as anxious as the older trades unions to prevent strikes by means of negotiation and conciliation. The stronger those trades unions became, the more likely was that result to be arrived at. He was glad to hear what fell from Mr. Price in reference to the board of conciliation that used to exist in connection with a large portion of the coal trade, which unfortunately was unsuccessful the other day in preventing a strike. He believed that board had now been reconstituted on a new basis, not on the sliding scale, but on a much more satisfactory basis on both sides, because both parties had agreed that before a strike should take place they would use every possible endeavour to arrange the matter by mutual agreement. He was glad to see Mr. Boulton, Chairman of the London Chamber of Commerce Committee of Conciliation, present. That committee had been somewhat misunderstood. It had been thought by some employers, and a large number of the men, that this committee intended to act themselves as a committee of conciliation, and to enter into labour disputes. As he (Mr. Buxton) understood their position, they simply wished to bring the pressure of public opinion to bear on each different trade, and to see if they could, by means of their central body and the rooms they were able to place at the disposal of the masters and men, bring about the formation of committees of conciliation and arbitration in each individual trade. Nobody would desire that these boards of conciliation should be

made compulsory on the trades. If a compulsory board were forced on a trade, it was idle to expect that either masters or men would necessarily obey such a board. It must be left to the mutual intelligence, education, and enlightenment of masters and men to meet together to talk matters over round a table as man to man, and not as master to man, under which circumstances the tendency always was to come to a satisfactory agreement.

Mr. GEORGE HOWELL, M.P., was exceedingly pleased with the tone of the paper. It was somewhat gratifying to him, because many years ago he had some battles at the Society's meetings over this very question, when it was thought that trades unions were very disadvantageous to the country, and ought rather to be suppressed than encouraged. During the last twelve or fourteen years there had been indeed a great change come over the spirit of the dream. In revising a book he published in 1878, "The Conflicts of Capital and Labour," he could see the enormous changes that had taken place all over the country. Society generally was beginning to recognise that trades unions had been very much better to deal with than unorganised labour. The paper stated—and Mr. Sydney Buxton seemed rather inclined to adopt it—that recently, for the first time in history, the skilled labour of the country had assisted the unskilled. Nothing of the kind. During the last fifty years there was ample evidence that organised bodies of workmen had voted their money freely to help unskilled labour, or skilled labour, as the case might be, when disputes arose with employers; the one condition of help being that the men requiring it should first begin to help themselves, or at least show their willingness to make the attempt. To such an extent was this the case, that the Amalgamated Engineers had over and over again voted money out of their funds to trades unions, or bodies of men banded together for a temporary purpose, who had been striking against the very machinery made by the engineers themselves; considering only that these men were in difficulties. He might remind the lecturer, as a set off against the suspension of the sliding scale in Northumberland, of what had taken place in the midland counties. The Midland Counties Wages Board had passed through difficulties which threatened to break it up, but they had weathered the storm; and within the last few weeks there had been meetings of employers and employed which seemed to show that the day was not far distant when the advantages of these boards would be recognised more than they had been in the past. Sometime ago a demand was made by men connected with the board with regard to a premium which the employers thought was too high. After some debate the employers, in order to avert a strike, consented to give this higher premium, asking the men to reconsider the question when the time should come. The matter had been brought forward again, and, considering the tone of the meeting, he (Mr. Howell) was inclined to think that the men would recognise that the premium was too high, and be prepared to make a reduction which would bring down the rates of wages to something like the level of that obtained in the north of

England. Many years ago the leaders of trades unions stood almost alone (with the exception of a few outside workers) in demanding arbitration in connection with labour disputes. Employers, almost entirely, all over the country, were averse to anything like arbitration. Now, unfortunately, whilst employers were getting to understand that it will be to their advantage to have arbitration or conciliation, some of the men were beginning to turn round and scout it, at least to some extent. He was sure the writer of the paper would know that there had been some technical difficulties in regard to the working of the sliding scale, one of them being that in the earlier scales the rise of wages to the men went up more slowly, while the reductions of their wages went down faster in proportion. Some of those difficulties had been got over, and his belief, at any rate his hope, was that as men more clearly and distinctly understood their duties towards each other, as members of the trades unions, and as employers showed an increased willingness to meet the representatives of the unions, conciliation and arbitration boards for dealing with labour disputes would take root all over the country. He might remind the lecturer that the sliding scale had been adopted in south Wales very recently, and now governed the wages of a very large number of men. There was not much difficulty with regard to representation whenever the conciliation board was composed of one particular trade. The real difficulty was when a conciliation or arbitration board was established to deal with a number of trades. Representation must take place on the widest possible basis, so that the representatives of the men at the board shall stand on the same footing as the employers themselves. He hoped the paper would call attention more widely to the question of conciliation; and he ventured to express a hope that the effort being made by the Chamber of Commerce of London—which was being taken up by the chambers of commerce in various parts of the country—would be successful. He hoped and trusted that the new men who were joining trades unions would not throw any obstacle in the way of the success of these boards. The reason, the sad reason, why the sliding scale failed in Northumberland, was not so much because the men got tired of it, as that they were stirred up to reject it by men from London and other parts of the country, who tried to induce the miners to get rid of their members in Parliament.

The CHAIRMAN asked Mr. Sydney Buxton whether the movement amongst the miners in Northumberland with regard to substituting something for the sliding scale, amounted to the establishment of a method by which, before a strike was entered upon, the employer and the employed could be brought together to endeavour by conciliation to remove the difficulties existing between them, or whether it was merely a sentiment amongst them that certain undefined steps should be taken in that direction?

Mr. SYDNEY BUXTON answered that he was not very intimately acquainted with that branch of the trade, but he understood that

men and masters—in connection with the federation of miners and of masters—had practically pledged themselves that, under every condition, before there was any question of a strike or lock-out, they would meet and endeavour by all possible and reasonable means to bring the matter to a conclusion by satisfactory negotiation rather than by strike or lock-out. That was how it stood at present; they were endeavouring to find some arrangement more satisfactory than the last.

MR. GEORGE HOWELL said it was by the National Federation of Miners, not the Northumberland and Durham Miners, that the sliding scale, having seemed to operate badly in portions of Yorkshire, was thrown overboard. After the strike, which lasted only a few days, negotiations were entered into by the masters and the representatives of the men; but the system to be adopted for the future had not yet been finally settled.

MR. C. M. NORWOOD said there could be no question of the advantage that would accrue by the substitution of conciliation and arbitration for strikes in the arrangement of disputes between employers and workmen. . . . The difficulty arose from the varied circumstances and conditions of each case. Mr. Price had taken a line which did not help him (Mr. Norwood) and those gentlemen joined with him in the administration of the docks, inasmuch as Mr. Price very naturally took as his typical examples of conciliation the sliding scales for wages which existed in the north of England. As far as the iron and coal districts were concerned, the sliding scale was a very rational and easily workable system, inasmuch as it was easy to ascertain the proportions which labour contributed to the cost of a ton of coal or of iron, and it was fair and reasonable to take the market price of the commodity as the basis on which the wage was to be apportioned. But he could not see how it was possible to apply any such scale to the case of unskilled labour employed by the hour, where strength of body was the chief ingredient, and where there was no fluctuation in the price of the article or service which the labour produced. The case he alluded to was that of the 60,000 unskilled labourers at the docks and wharves, and similar employments on the riverside of the Thames. He was not surprised the lecturer avoided treating that subject fully. It was a new phase of labour difficulties that unskilled men had asserted themselves in the way the labourers asserted themselves during the autumn of last year. Mr. Price would be performing a great service to the industrial world if he would turn his attention to the peculiar circumstances connected with unskilled labour, and point out the manner in which some satisfactory basis of remuneration could be arrived at to supersede the old economic principle of "supply and demand," which had hitherto formed the basis of wage payment, especially of unskilled labour. He was not going to enter into debateable points with reference to the great dock strike, but it appeared to him that in discussing the question many persons lost sight of what he believed to be the great fact, that the strike was not a spontaneous or isolated move-

ment on the part of the men for a moderate improvement of their position, and conducted by the older leaders of trades unionism, but it was the commencement of a great socialistic movement carefully prepared, to affect the labour not only of this country, but of the entire continent of Europe, and for other and for political objects. He believed that the scheme was laid by some very able and very determined men months before the strike broke out; that it was recognised that with such a large amount of unskilled labour it would be almost impossible to raise the socialistic standard satisfactorily in this country until something like life was infused into a body of men who up to that time had not shown any power of organisation, nor any special discontent with the terms and conditions of their employment. If masters and men could meet together to discuss wages questions between them, much difficulty could be avoided; but there was a body of agitators, of various grades, who found it to their advantage, politically and otherwise, to stir up difficulties. Professed socialists of great ability were really the mainspring, support, and guides of the great movement to which he had alluded, and he ventured to tell the Society, as the result of his experience, that these men had not for their aim, nor would they be content with, a mere improvement in the position of labourers in this country, based upon an improvement of their wage in harmony with the true interests of trade, and he should be very much surprised if, under the guidance of these men, we get anything like finality in the way of settlement of the wage question. It is a fact that the old trades unionists kept aloof from this movement. His belief was, that the best way of solving the labour difficulty would be for the men to discard socialistic elements in their organisation for those of the old trades unionism, and to elect as their representatives men of a higher mental and social class than those who assumed to lead them at the present time. His advice to the dock labourers, and men of that class, would be, that wherever they could find a man among themselves thoroughly capable of representing their views with moderation and judgment, they should pay him well—not meet out the miserable doles which he believed their leaders had received from time to time—and place confidence in him, so that there might be an effectual means of communication and access between the masters and the men. One of the great difficulties had been, that hitherto there had been no means of tying down sections of men to the agreements made by their representatives on their behalf. He believed in many cases the leaders of the men desired to act fairly. In some cases they had remonstrated with the men, who were so ignorant, or so elated by what they supposed to be their great triumph, that they would listen to advice from no one. When these men were more accustomed to their position, he thought there would be an opportunity of both parties coming together and by fair discussion settle their disputes; but whether that could be done without a great struggle throughout the country, which would try the power of endurance of the two parties concerned in labour operations, he could not tell. A severe fight must eventually take place if there was an unreasonable demand on one

side, or resisted unreasonably on the other. He had little or no faith in arbitration in respect to unskilled labour, but anything that could be devised to make the system of conciliation more easy, more applicable, and more readily available would be a blessing to this and to all commercial countries which it would be difficult to exaggerate.

Mr. S. B. BOULTON said that besides the exceedingly valuable information Mr. Price had put in his most able and interesting paper, the Society might thank him for something he had not put in. There was a great temptation for a lecturer to endeavour to establish some cut-and-dried principle which should be applied to all trades in all parts of the country. He (Mr. Boulton) thought no such cut-and-dried principle would succeed for all cases. Any system of conciliation or arbitration must vary with the various requirements of the different trades and of the different districts. He (Mr. Boulton) had been appointed Chairman of the Conciliation Committee of the London Chamber of Commerce, a committee which had been appointed by the council of the chamber for the purpose of ascertaining whether it would be possible to draw up some scheme for their own guidance, or the guidance of others who might wish to avoid these lamentable strikes. The committee had to abandon very early any idea of trying to influence the legislature to pass any compulsory powers of legislation to arrange wages for the future. If an Act of Parliament were passed giving compulsory powers to fix wages, the men could not be forced to work unless they chose to do so; and it would be equally impossible to make an employer pay any fixed sum for wages beyond the given length of time for which the workmen engaged to serve. During the great dock strikes there was a committee of dock directors sitting in Leadenhall Street, and a committee of dockers on strike sitting at the "Wade Arms," and it was almost impossible to get the two bodies together. The Chamber of Commerce, being a body deeply interested in all commercial disputes, thought that it might offer neutral ground for the purpose of such meetings upon the basis of the conciliation boards or committees which have been formed in the north and elsewhere. It could not be expected that employers would go to a trades union committee sitting in a public house, and there was a shyness on the part of the men to go to the offices of the employers, therefore it was thought that to offer a neutral meeting ground, such as the rooms of the Chamber of Commerce, was a step in the right direction. The chamber also thought that if the workmen and employers of the different trades could be induced to appoint a certain number of representatives to meet together as conciliation committees, all questions between them might be threshed out without these strikes and lock-outs. Besides these separate trades committees, it was proposed to form a central conciliation board, composed of equal numbers of employers and employed, in which all the trades of London should be represented. It was thought that in some cases where the conciliation committee in a particular trade was not able to settle its dispute, it would refer its question to the central conciliation board, to be

considered by men of other trades deeply interested in peace, because it was impossible in the present day to have a great strike in one trade without a great many other trades being affected. If that second attempt did not succeed, then the central board would advocate some form of arbitration, but arbitration only with the consent of the parties, the choice of the arbitrators being entirely at their disposal. The scheme had been drawn up by practical men, thoroughly acquainted with the conditions of labour in London, and so far it had met with a fair amount of success. The chamber of commerce had the support of some twenty-five trades unions, the working men of which were appointing delegates. He thoroughly agreed with what Mr. Norwood had said about socialism abroad. M. Julien Weiler, engineer and manager of the great collieries of Mariemont and Bascoup in Belgium, in some pamphlets which he had published, had spoken of the growth of socialism, and of the anarchical and subversive influences which influenced strikes in Belgium. M. Weiler had been attempting, with great success, to introduce labour conciliation; but what did this large employer of labour and enemy of anarchy mention as one great impediment? He said that the great difficulty they have in Belgium is that they have not sufficient trades unions, and he advocated their formation. Without trades unions it was almost impossible to get into contact and make agreements with the working classes, and the sooner the prejudice against them was got rid of the better. The rate of wages must, in the long run, be fixed by the law of supply and demand. If therefore there was to be peace between employers and employed, the more the arrangement as to wages was reduced to a question of a trade bargain the better, and that could only be done by their meeting together and discussing the questions between them. The present conciliation committee of the London Chamber of Commerce was not formed for the purpose of *administering* conciliation, but merely for drawing up rules. Since they had begun their labours they had never sought to interfere in labour disputes, but their intervention had nevertheless been frequently solicited, and pending the formation of the permanent board and committees, the council had advised them to give their help if required. In two or three cases they had been very successful, notably in the case of the threatened strike of the bargemen of the Medway against the cement manufacturers of that district. In that case he (Mr. Boulton) acted as chairman of the meeting of employers and employed. An agreement had been arrived at with which both parties were thoroughly satisfied, and he was glad to add that the agreement had been loyally kept on both sides, and over one thousand men had been restored to work. He was hopeful that a system of labour conciliation, adapted to the particular requirements of the metropolis, might prove as beneficial as similar organisations had been elsewhere.

The CHAIRMAN, in expressing by anticipation the thanks of the meeting to Mr. Price for his very valuable contribution to the Society, said the paper and the discussion were two as valuable

instruments of public usefulness as the Society had had the opportunity of offering its members for some time past. He conscientiously believed that one of the reasons for the excellent feeling between the employers and the employed in Mr. Hey's trade, was the existence of so sensible and reasonable an officer of the trade union of that branch of trade as his friend Mr. Hey himself. He agreed with Mr. Howell and Mr. Norwood, that if labour questions were settled between employers and the men in their employment without the exercise of very pernicious external influence, either by boards of conciliation or friendly intercourse, we should hear very little of strikes. But there were influences external to the relations of masters and men in particular trades that had produced mischief, and would produce mischief as long as they were allowed to exist.

Mr. W. H. HEY thought it would be utterly impossible to bring the sliding scale into operation in connection with all the industries of the country. It would certainly be impossible to apply it to the industry with which he was connected—iron moulding. He was not quite as favourable to arbitration boards as to conciliation boards; for wherever arbitrations had occurred they had never settled anything that had lasted for any very great length of time. There was no trade union in existence where the members had experienced fewer differences with their employers than the iron moulders. He was prepared to believe that the members of the Iron Founders' Society had received advances of wages quite as liberally and freely as any other trade organisation, and better than many; all or nearly so being the result of conciliatory methods.

Mr. L. L. PRICE commenced his reply by reading a letter from Mr. Spence Watson, who, he said, had had great experience in connection with arbitration in the north of England. After stating that the Cumberland mine owners had this year formed a board, and that he heard from the United Cotton Spinners' Association of Manchester that a proposal to form a board for the adjustment of disputes between the employers and employed in the cotton trade was at present under consideration, Mr. Watson said: "The curious thing is that there is so much more arbitration now than conciliation. This is really occasioned by the great movement in unskilled labour. I have up to this year thought *three* arbitrations in a year a great many; this year I have had *six*." After referring to the difficulty of the arbitrations, Mr. Watson added, "The encouraging thing is that, up to the present time, I have never had an award disputed. They have been constantly given against the men, and sometimes entirely given against them. The very last I issued refused the men's demands, but I must say that the spirit of genuine loyalty to the principle of arbitration which is shown has been to me very satisfactory and very remarkable." He (Mr. Price) did not suggest for a moment that the sliding scale could be applied to every industry, and in writing on the subject he had laid great stress upon this. Nor did he flatter himself that he could sketch

a means by which it could be applied to such an industry as that to which Mr. Norwood had referred. One method of conciliation must be applied to one industry and another to another; and he felt very strongly that it was impossible to lay down a hard and fast rule and to say what could be applied in each case. What he thought we could lay stress upon was the endeavour to get the masters and men together. He had great faith in that, and that faith had been illustrated by what Mr. Boulton had said. When masters and men could once be got to meet together habitually, they would, he believed, arrive at a satisfactory solution, a solution which an outsider could not suggest, and it might be that the solution would take a form which an outsider could not even imagine. The movement amongst unskilled labourers was not confined to London, and it was difficult to trace the connection between these movements and socialistic agitation. The peculiar feature of the dock strike was that the skilled labour came out on strike to assist the unskilled. He did not know whether that had been paralleled in history. But on the Tyne there had been, as he had showed in his previous paper, opposition on the part of the skilled labour to the unskilled. When once masters and men recognise that it would be better to arrange their disputes amongst themselves, committees of conciliation could be established, and arbitration pushed into the background; but with unskilled labour at present we seemed to have that arbitration which often preceded conciliation.

MISCELLANEA.

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I.—The Element of Chance in Competitive Examinations.

By PROFESSOR F. Y. EDGEWORTH, M.A., D.C.L.

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PART I.

IN the course of a walking tour along the Roman Wall in the north of England, in company with some friends, I lately visited the magnificent remains of the camp or station at Chesters. We admired the fortifications, we inspected the guard rooms, we noticed the very ruts which had been worn by the chariots of the conquerors, like the Antiquary, we traced a "prætorium here, prætorium there," without fear of an Edie Ochiltree's comments, and having gratified our curiosity, were about to push on to the next station, when the botanist of the party pointed out a lowly plant crouching among the ruins, of a species, he said, which had been introduced from Italy by the invaders. This new topic reanimated our flagging interest; we scrutinised the masonry with fresh curiosity; some hoped to find a Roman snail; all voted to stay a little longer.

Like our botanist on that occasion, I hope now to recall attention to an exhausted subject by presenting a fresh aspect of it. The study of mural flora is about as indirectly related to the general interests of the antiquarian, as the topic which I have to introduce is to the wider questions which have been lately discussed in the *Nineteenth Century* and elsewhere. I do not attempt to re-open those discussions. I confine myself to a particular technical point.

My subject is not the philosophy of examination, but the statistics of marks.

One of the best things said at the late symposium was that examinations are like the barometer: an instrument which directly measures the pressure of the atmosphere, but only inferentially, and as one sign among others, indicates that about which it is mostly consulted, the weather. He who trusts implicitly the rise of the mercury, when the north-east wind is blowing, deserves to get a wetting. Similarly it is admitted that examinations test the possession of a certain kind of perhaps temporary knowledge, and a certain facility of expressing it. But how far those qualities indicate true education and real efficiency may be questioned. I do not discuss that question. I confine myself to the strictly barometrical use of examinations; and endeavour to determine with what precision they measure those qualities which they measure directly. The inquiry is not without practical interest. It is true that if the instrument is found to be a good barometer in the strict sense, it is not therefore proved to be a good weather glass. But the converse does not hold. If marks rise or fall casually, and without a constant and close relation to the work examined, if examinations are not even a good measure of educational pressure, much less can they be useful as a forecast of real efficiency.

In the case of an actual barometer we can determine whether the degrees are rightly marked by reference to a constant standard—the yard measure which is kept in the Tower. In determining the correctness of the scale according to which an examiner marks, we have not this resource. We are in the position of the primitive men, who had to measure length by the human foot. The wisest course under those circumstances would have been to have taken as the standard foot the average of a great number of feet. If the feet averaged were those of men belonging to the same tribe, there would be afforded a pretty constant linear measure, and one which, for most practical purposes, might dispense with a more objective standard. By parity it is here postulated that the true or standard mark of any piece of work, is the average of the marks given by a large number of competent examiners equally proficient in the subject, and instructed as to the character and purpose of the examination. As sin came by the law, so, having settled what is the right mark, we can determine how far any particular examiner's mark is wrong. The error committed is the difference between the mark in question and the ideal mean above described. My first problem is to estimate the probability that an error of assigned extent will be committed by a competent examiner in marking a piece of work of any given sort.

I do not however insist on what may seem a rather metaphysical definition of rectitude or error. If any one denies that the mean of a great number of judgments constitutes a true standard of taste, he is free to indulge his own philosophical views. He may regard the assumption here made as a mere working hypothesis which is useful in solving questions like the following: How far is it likely that any two examiners will differ from each

other in their numerical estimate of the same work? What is the probability that there will occur a difference of any assigned extent between two marks given by a pair of examiners to the same work? If candidates under one examiner come out in the order a, b, c, d, e , &c., what, in any specified case, is the probability that under another equally competent examiner this order would be broken up, and x or z might stand where a does now?

However we define error, the idea of calculating its extent may appear paradoxical. A science of error seems a contradiction in terms. As the wise slave in the ancient comedy says, when his master begins to reason about love, a thing which is in its nature irregular and irrational, cannot possibly be governed by reason. It would be like going mad according to method.

Natural philosophy has however triumphed over this paradox. Mathematicians have constructed an apparatus for reducing to rule errors committed by astronomers and other physicists in their observations. It is proposed here to transfer to errors of judgment committed by examiners, the theory which is primarily applicable to errors of perception committed by observers.¹

I am aware that the analogy is not perfect between the measurement of external things, like distances and angles, and the estimates of what may be called psychical quantity, the merit of a candidate at an examination. By way of bridging over this chasm, I propose first to consider an intermediate case, where the thing to be determined is still a real objective quantity, but the mode of determining it is not a simple observation, but an estimate attended with about the same haziness and hovering of judgment as an examiner is apt to feel in assigning a mark. Of this sort, as it seems to me, are the estimates which one makes of height or weight of objects without the use of rule or scales. A discussion of such conjectures may form a fitting prolusion to the statistics of examination marks.

In carrying out the experiment which has been indicated I have not operated on the proverbial *vili corpore*. The body about the measurements of which it seemed easiest to obtain a variety of estimates was my own. Accordingly I asked every second friend whom I met what he thought my height was, and what my weight. I have tabulated the figures so obtained, ninety-six of each species; and will now present the general results which the scrutiny of them yields. Let us take the weights first.

Probably the first question which the reader will desire to have answered is whether the result of the estimates was correct, whether on taking their average the true weight came out. But from the present point of view this question is irrelevant; what I am concerned with is not so much the objective weight as the average impression produced on a variety of minds by the same appearance. This apparent weight is for the present purpose regarded as the true measure; and I want to ascertain whether the

¹ For a more terse and technical statement of the reasonings which follow, the mathematical reader is referred to the writer's paper on "Problems and Probabilities" in the *London Philosophical Magazine* for 1890.

deviations from that apparent weight, defined as errors, can be reduced to law and admit of prediction. Whether the apparent weight coincides with the true one, is for the purpose of this theory indifferent. As a matter of fact the coincidence is almost perfect. The apparent weight is 10 st. 10 lbs. 14 oz.; the true weight is 10 st. 10 lbs. The values obtained by averaging batches of sixteen estimates oscillate about the true value thus: 10 st. 10½ lbs., 10 st. 9 lbs., 10 st. 8½ lbs., 10 st. 8½ lbs., 11 st. 1 lb., 11 st. 1 lb.

What it is more important here to notice is, that there is a certain regularity in the errors. First, taking the average of each batch of sixteen, and treating the deviation, whether in excess or defect, of each constituent estimate from that average as an error, I have obtained by averaging the sixteen errors so obtained for each batch, what may be called the average error for each batch. The following are the results, in pounds avoirdupois:—

6·5, 6·25, 6·5, 7·5, 5·9, 7·2.

It requires very little acquaintance with statistics to justify the conclusion that there is a certain method in these errors. If we had observed only the first three batches, we could have predicted with some accuracy the extent of error incurred by the last three batches. The average of the first three is 6·4; of the second three 7. In fact from any one of the batches we could have safely predicted the general character of the fluctuation in the estimates. In the same way I submit that by observing the divergence between a limited number of examiners marking the same work, we may form a tolerably correct estimate of the divergence to be expected between other examiners operating on the same or similar subject matter.

In the experiment just described I have treated each batch as a complete series, and defined error by reference to the average of the series to which any estimate belongs. It was proper to make this supposition, in order to test how we should have fared if we had only one batch. But since in fact we have six batches, let us now define the apparent weight as the average of these ninety-six estimates, in round numbers 10 st. 11 lbs.; and reckon errors by reference to this mean value. Looking separately at the errors in defect and in excess, I find that there are forty-seven of the former, and forty-nine of the latter. The average of the errors in defect is 7·2; the average of the errors in excess is 6·8. Let us now split up each of these groups into smaller sets. The average of the first twenty-four errors in defect is 7·5; the average of the remaining twenty-three errors in defect is 6·8. The average of the first twenty-five errors in excess is 5·6; the average of the remaining twenty-four errors in excess is 8. Cut up the evidence, as the Chinese do their witnesses, and still you obtain a consistent tale.

One particularly interesting question which may be asked about the results is, what extent of error is quite likely, and what is improbable. Looking at the errors in defect, I find that out of all the forty-seven, twenty-three are less or not greater than 5,

twenty-three are greater or not less than that limit. The twenty-fourth in the order of magnitude is 5. Similarly among the forty-nine errors in excess, the twenty-fifth in the order of magnitude is 5. That then is the extent of errors or difference from the "common sense of most," which is as likely not to be committed by any one of the class to which my friends belong, in estimating at sight my weight; the "probable error" in technical terminology. As in a former case, we may verify this result by showing that much the same evidence is yielded by different parts of our materials. Observing the errors in each batch of sixteen, the errors measured from the general average 10 st. 11 lbs., and arranging each batch of sixteen in the order of magnitude, without regard to *sign*, treating positive and negative alike, I obtain the following six determinations of the required limit: 4.5, 4, 7, 7, 4, 5.5; hovering closely about the value already obtained, namely, 5.

Not only can we find what error is likely, but also what error is unlikely to occur. I can assert with considerable confidence, that the odds against an estimate of the sort described exceeding or falling short of 10 st 11 lbs. by as much as 12 lbs. are more than 5 to 1; and I have some ground for believing that the odds against an error (positive or negative) exceeding 18 lbs. are about 25 to 1. In other words, I should expect that if I had questioned a hundred more friends, less than 16 per cent. of their estimates would be wide of the mark by as much as 12 lbs., and some four or five by more than 18 lbs.

It is useful to have a method of representing ocularly results like those which we have reached. The following device will be found convenient. Take a horizontal line, and mark on it points or notches indicating different degrees of the quantity estimated in the case before us, weight. Appropriate points are, one which corresponds to the apparent weight, in our case 10 st. 11 lbs.; a higher point which is such that of the estimates which exceed the mean value or apparent weight, about a half are above the point defined, in our case 11 st. 2 lbs.; a point similarly related to the estimates in defect of the mean value, in our case 10 st. 6 lbs. To these may be usefully added two points at a greater distance from the central one; for instance 9 st. 10 lbs., and 11 st. 12 lbs.

IV	XIX	XXIV	XXVI	XIX	IV
9/10	10/6	10/11	11/2	11/12	

The points described are represented on this page; 9/10, 10/6, &c., being put as abbreviations for nine stone ten pounds, &c. The points are in line; but, to avoid exciting alarm by the introduction of mathematical apparatus, the line has been left to the reader's imagination. The Roman numerals above the imaginary line, indicate the number of returns which occur in each of the spaces demarcated by the numerals on the line. Thus four of the estimates which are tabulated are less than 9 st. 10 lbs. Nineteen of them occur between 9 st. 10 lbs. and 10 st. 6 lbs.; twenty-four between 10 st. 6 lbs. and 10 st. 11 lbs.; and so on. When there occur several observations exactly at one of the marked points, half of them may be assigned to the compartment on the right of

that point, half to the left.² For instance the weight 10/6 was guessed four times. Two of these returns go to swell the XIX on the left of that point; two fall to be added to the XXIV contained in the space on the left. When an odd number of observations occurs at one of the limiting points, the benefit of the odd observation may be given to the compartment which is nearer to the centre.

We may employ this sort of apparatus to exhibit at a glance the grouping of a second species of estimates, which I obtained by asking each of my friends to guess my height. The accompanying row of figures, 5·5, 7·5, &c., denote inches above 5 ft. The Roman numerals—

III	XVI	XIV	XXV	XXXIII	
5·5		7·5	8·5	9·5	11·5

represent the number of estimates which fell in each of the spaces thus designated. Thus, out of ninety-six returns, there are three below 5 ft. 5½ in., sixteen between 5 ft. 5½ in. and 5 ft. 7½ in., and so on. It will be seen that the group formed is not so symmetrical as the set of weight estimates. The left, or lower limits of the figures, stretches out unduly, while the upper limit seems furled up. 8·5 is the average; which is brought down by the lower arm—like a long lever balancing a greater weight on the shorter arm. The midway point, that which has as many observations above it as below it, occurs at 9. The true height is just between these two species of mean values.

Owing to the want of symmetry which has been noticed, the average errors for small batches do not present the same regularity as was noticed in the case of the weights. A sufficient degree of constancy is shown by the following figures, each of which denotes the midway error obtained by arranging in an order of magnitude (without respect to *sign*) the errors of each batch of sixteen estimates, errors estimated by reference to the average, (5 ft.) 8½ in. as the correct apparent height:—

1, 1·5, 1·25, 1·5, 1·5.

Again take separately the thirty-eight negative errors presented by the estimates lower than 8½ in., and divide at random this set into two batches, each of nineteen. The midway error for the first batch is 1 inch; also for the second batch 1 inch. Or take the fifty-eight positive errors, and consider the arrangement of the twenty-nine figures which were obtained in a random order, namely, that in which I received and tabulated the estimates. The midway error for this contingent is 1·5; for the rest of the positive errors 1. Thus it is reasonably certain that, out of a large number of such estimates, many more than half will not deviate from the average by so much as 1½ inches. It is nearly even betting that

² Those who find geometrical illustrations helpful, will do well to complete the figure by erecting at the middle of each enclosed space a perpendicular to the line on which the degrees are marked. Joining the tops of those perpendiculars, we obtain an idea of the *curve* which an indefinitely prolonged series of observations would form.

any particular estimate will not deviate more than an inch. The accuracy thus indicated compares favourably with the estimates of weight, if we take as a common measure of erroneous-ness the proportion between the extent of error and the quantity of the thing to be determined. In the case of the weights the deviation as likely as not to occur, the "probable error," was $3\frac{1}{3}$ per cent. of the quantity estimated (my weight 150 lbs.); in the case of the heights this coefficient is only 1.5 per cent. (of my height 5 ft. $8\frac{1}{2}$ in.).

The reader will now begin to realise that guesses and errors are not entirely random and chaotic. They do not "float about conspicuously nowhere," as Carlyle says of modern politics, but rather drift in certain currents which may be traced by those who have scientific patience. Laws measuring the fallibility of human judgment may be ascertained with some precision. But of course in this and every branch of science the leap from the known to the unknown must be made with caution. I am reasonably certain that one hundred fresh estimates of my height and weight made by the same class of men, will be grouped in much the same way as those which I have examined. If the estimates relate to some one else, or are made by persons of a class different from my friends, I become less certain. If the object estimated is altogether *in aliâ materiâ*, I have not even a presumption.

The diversity of laws of error, and the danger of transferring our empirical generalisations to cases not adjacent, are shown by the following statistics which were obtained³ by putting to a number of persons the following question: How many five pound notes are equal in weight to a sovereign (notes and sovereign both being new)? The answers to this question do not conform to the same law as the estimates of either weight or height. The form now presented is neither perfectly symmetrical as in the case of the weights, nor does it bulge a little as in the case of the height, to the left or lower side. On the contrary the right or upper limits stretches away towards infinity. This peculiarity is exhibited in the following scheme, which represents the grouping of eighty⁴ estimates of the weight of a sovereign in five pound notes.

XII	X	XXV	XXIII	XXV	XI
0	8.5	14	50	100	225

This mental comparison of objects presented by memory and imagination is perhaps better suited than our first two experiments to illustrate the working of the examiner's mind as he ponderates the ideal quantities of literary and scientific merit. I should not suppose, however, that even among examiners there could occur such extreme diversity of judgment as these conjectural estimates present. The most striking degree of discrepancy between marks

³ Three-fourths of these answers were obtained by myself, the remaining twenty by a friend. There seems to be no difference in the character of the two sets of queries.

⁴ In the companion paper in the *Philosophical Magazine*, 1890, the number of conjectures operated on has been increased to ninety-six, without any material alteration in the character of the grouping.

which I have observed occurs in marks given at an examination in classical composition. The mark of one examiner is occasionally five times, and once sixteen times as great as the mark assigned by his equally and highly skilled colleague to the same piece of Greek verse. But the highest estimate of a sovereign's weight in notes is 20,000 times greater than the lowest! The penultimate or lowest but one is 750 times less than the highest but one. The four estimates to which I refer, namely, 1, 2, 1,500, and 20,000, were made by persons of sense and ability, two of them eminent in science. Such extreme disparity could, I suppose only occur at an examination where the examiner unfairly assigned his mark solely with reference to the supposed truth or falsehood of the candidate's speculative opinions. It is related that when Frederick Maurice used to examine in moral philosophy, it was a good time for the candidates who had been brought up in the school of thought most opposed to the examiner's views. Conscious of a bias, the scrupulous examiner was said to act like those persons in authority who are so much on their guard against nepotism that they will not promote their own friends, however deserving. If Maurice had expressed in his marks his estimate of the worth of the fashionable empirical philosophy, and his colleague, an eminent disciple of Stuart Mill, had acted on the same principle, it is possible that the marks would have differed as conspicuously as the higher and lower estimates of a sovereign's weight in notes. The discrepancy of human opinions may afford to superior beings the same amusement as to us do these statistics of conjecture. The estimates formed by political partizans as to the importance of their respective causes, and the enormity of the adverse side, may differ from each other, and from what a less finite intelligence may perceive to be the correct estimates, as much as highest figures 20,000 and 1,500 differ from our lowest, 1 and 2; and from the correct figure, which the reader will be surprised to hear is 6.

But it is not our part to moralise on human fallibility in general. At present our more pleasing task is to show that even in the midst of the grossest ignorance and wildest error, there may be found a drop of science if we but diligently press it out. If we split up the whole set of eighty conjectures into two batches, it will be found that certain characteristics are fairly constant. The grouping of the two batches which are first and second in the order of their entry is exhibited in the annexed schemes. It will be seen that there is common to both figures the leading feature of a right or upper limb, longer than the left or lower limb; the midway, or "probable" error (measured from the central point) greater, and what may be called the extreme or improbable error, much greater in one direction than the other. There is a certain degree of approximate equality in the length of the intervals between the corresponding points of the two figures.

VI	V	XIII	XII	IX	V
0	10	12.5	40	87.5	300
VI	VI	XII	XII	VI	VI
0	7	17.5	55	122.5	225

The reader will now begin to apprehend the general character of our method. Just as by observing the estimates made by a number of persons as to the weight or height of the same body, we discover the law of error proper to similar species of estimates, so by observing the marks given by a number of competent examiners to the same piece of work, we ascertain an empirical law which may be extended to adjacent cases. The first example of this method relates to some statistics which Mrs. Bryant, D.Sc., of the North London Collegiate School, has kindly furnished. A pupil in the sixth form of that school having worked a mathematical paper, the work was marked by sixteen competent examiners, including Mrs. Bryant. The figures so obtained present much the same sort of constancy as we observed in any one of the batches consisting of sixteen guesses as to height or weight. Thus the midway deviation from the average, 52, the "probable error," as derived from all the sixteen observations, is 4.5; for the eight first in the order of entry it is 3.5; for the second batch 4.5. Accordingly it is not a leap in the dark when we infer that what is true of one set of sixteen examiners marking that paper, would be approximately true of another set of equally competent examiners marking the same paper.

We make a bolder leap, we draw an inference whose validity is not so well guaranteed by previous experience, when we assume that the law of dispersion presented by marks given to one mathematical paper, will hold good for marks given to another similar paper by the same examiners. The inference however proves safe. The character of the divergence in the case of a second paper proves much the same. For instance the midway error which with respect to the first paper was 4.5, is for the second 3.5. Accordingly we have some confidence that the characteristics of a third set of marks assigned by the same examiners to a third paper will not be very different. Nor is this expectation disappointed; the midway error for the marks given to the third paper is 5.5; there is also a certain similarity between the three sets as to the limit beyond which error is very rare. Altogether I should be surprised if out of a great number of marks given by examiners of the same class to similar papers in geometry, the midway or so-called probable error proved to be much greater than 4 or 5. With rather less confidence I should expect that more than, on an average, a sixth part of the marks given to the same work would not deviate from the central value, the presumably true mark, to an extent exceeding 8 or 9. But of course, if the papers examined were very different in merit from the three instanced, very much better or worse, the inference would become hazardous.

When we pass to quite a different category of work, such as history, we cannot be certain that the law ascertained for the case of geometry will continue to hold good. It might be expected that history would be more a matter of opinion than geometry. In fact, however, there does not seem to be any material difference between the two cases, so far as I can judge from the limited experience which is afforded by three

sets of marks assigned by nine different examiners to three history papers.⁵

The experiment which I shall next adduce is *in aliâ materiâ*. It relates to a piece of Latin prose which the editor of the *Journal of Education* kindly allowed me to insert in a recent number of that periodical, with a preface of which it may be well here to reproduce in part:—

“I propose, through the medium of the *Journal of Education*, to invite any competent person to assign a mark to the subjoined piece of Latin prose, upon the supposition that he is marking the work of a candidate for the India Civil Service. Let it be distinctly understood that in giving his mark the examiner is not to look to, or wish to illustrate, his own ideal of classical elegance, nor yet the degree of proficiency which may be current in the school or other institution with which he may be connected. Let him imagine that he has been appointed examiner in Latin for the India Civil Service, and let him give his mark having regard only to what may be expected from a candidate for that prize. Let 100 be the maximum attainable by any candidate.

“To avoid accidental divergence as much as possible, to perform the experiment under the most favourable conditions, I would suggest that the examiners should consist of a pretty homogeneous class—of much the same class as those who actually conduct our public examinations. To be more definite, I would invite to take part in this experiment only those who have taken high honours in classics at one of the universities, or classical masters of the sixth form in a public school. All such are earnestly invited to examine the accompanying piece with as much care as if they really were exercising the function of a public examiner; and to send to the editor their verdict, guaranteed by their name and status, which, it need hardly be added, it is not intended to publish. It is desirable that the examiners should assign their respective marks independently, and without mutual conference.”

In response to this appeal 28 highly competent examiners were so kind as to mark the piece of Latin prose. The grouping of these twenty-eight independent marks may be expressed by the accompanying scheme of figures, with the interpretation of which the reader will by this time be familiar:—

II	V	VII	VII	V	II
63·5	73·5	78·5	83·5	93·5	

The actual marks are—

45, 59, 67, 67·5, 70, 70, 72·5, 75, 75, 75, 75, 75, 75, 77, 80, 80, 80, 80, 80, 82, 82, 85, 85, 87·5, 88, 90, 100, 100.

It will be seen that 78·5 is the central value, the presumably correct mark,⁶ the probable error on either side of the correct mark is 5. It may excite surprise that this error is not very much greater than what we observed in the case of the geometry and history, which, without offence, may be described as not requiring on the part of the examiner such an exercise of literary taste as the Latin prose. But when we consider the extreme as well as the central portions of the Latin prose group, we shall be justified in attributing to the marking of the more advanced work a larger

⁵ I am indebted to Mrs. Bryant for procuring these statistics.

⁶ The arithmetic mean is 78.

element of chance. It is interesting to observe that the two highest marks, 100, are (each) more than double the lowest mark, 45. An occurrence of this kind is not at all uncommon in the marking of advanced work, where there is room for great diversity of taste in the examiners.⁷

Proceeding thus with different classes of subject, we may obtain the law or form proper to each category; and thence deduce with some confidence what degree of error in any particular case may be expected, and what may be regarded as incredible, or at least very exceptional.

This sort of result might be employed to test the element of chance in a competitive examination where honours are awarded to all who obtain at least a certain prescribed number of marks. Let that limit be 80 out of a 100 in a subject which is affected by about the same element of chance as would appear from the example which we have cited to disturb the appraisement of a certain quality of Latin prose. Suppose that a candidate obtains 95 at such an examination, it is reasonably certain that he deserves his honours. Still there is an appreciable probability that his real mark, as determined by a jury of competent examiners (marking independently and taking the average of those marks) is just below 80; and that he is pushed up into the honour class by the accident of having a lenient examiner. Conversely, his real mark might be just above 80; and yet by accident he might be compelled without honour to take a lower place as low as 63.

I could point out some actual examinations where places, or prizes, are awarded upon the principle just described. The more usual principle, I believe, upon which appointments are awarded at our public examinations is to settle beforehand the number of places, say n , and to assign those n places to the n first candidates. In determining the element of chance at such a competitive examination, we are concerned not so much with the absolute number of a candidate's marks, as with his position in relation to his competitors. Suppose A comes out by 15 marks higher than B under one examiner, we have to find the probability that under another examiner B would come out above A.

One step towards the solution of this problem would be to ascertain the discrepancy which is apt to exist between examiners marking the same work. To derive this requisite from statistics like the plural marks of Latin prose which, with the assistance of the *Journal of Education* I have collected, you might proceed as follows: Take as many chips of pasteboard as you have different marks for the same piece of work; in the case instanced, 25. Inscribe on each ticket one of the marks; the same mark on several tickets, if that mark has been assigned by several examiners. Shuffle the tickets, and take out one at random. Replace it; shuffle again, and take out a second. Subtract the second from

⁷ No doubt the extremest divergencies are partly due to a difference, not of taste, but of *scale*. In the case of English composition and the speculative sciences, I have met with equally great discrepancies in the marks given by two examiners to a particular candidate, without any corresponding difference in the average of their marks given to a whole set of candidates.

the first; and write down the difference with its *sign*. Replace the ticket, and, repeating the operation, write down the difference between the third and fourth tickets. Tabulate the series of values obtained by this process, and observe the character of their mutual divergences. Assuming what our introductory studies justify—that the grouping of the primitive observations, the simple marks, may be regarded as fairly typical of the examination in question, then we have obtained the type of differences between such marks by the process indicated. I have actually performed this operation with respect to the Latin prose marks, and ascertained with some precision the law of discrepancy between two examiners marking the same work under like conditions. This labour of inspection may be abridged by a certain more general and potent method of deducing the required datum. This *à priori* method is applicable to the case to which we have hitherto confined ourselves—of what may be called a one-horse examination in a single paper—in virtue of the fact that a single mark is very often really plural. The mark of a paper is often the sum of marks given to several answers. Even in appraising Latin prose, several elements of excellence are weighed more or less separately, and in a manner summed. There are those who divide the piece into sentences, and add up the marks given to the several fragments. All these cases are amenable to a theory which seems peculiarly adapted to the case of an examination in several subjects, the general case, to which we now proceed. When we take into account two or more papers as in the common case of an examination where precedence is determined by the sum of marks relating to different subjects, it may be supposed that the problem becomes more complicated. It is thus that the problem of two bodies moving freely in space is more difficult than the dynamics of a particle, and that the problem of three bodies is almost intractable. The analogy of physics is, however, not altogether discouraging. The difficulty of the problem does not increase indefinitely with its complexity. The case of an immense number of bodies rushing with every degree of speed in all directions, admits of a certain solution. In some respects a crowd of phenomena is more easy to manage than a few individuals. For a certain order is generated by chaos; and multitudinous discord results in rhythm. In virtue of this principle it turns out that compound marks formed by adding marks in several subjects, are more amenable to science than the components.

I must warn the reader that at this stage some little effort will be required in order to make progress. There are two or three steps which, however great the willingness of your guide, you cannot hope to surmount without some personal exertion. But surely it is worth while making a little effort, if there is any hope of obtaining at all clearer views on a subject of vital interest to such wide classes. What should we think of a company, who dealing in thousands and millions sterling, grudged the payment of a professional accountant to check the accounts of their directors! It would be a similarly false economy on the part of educated society, considering the stupendous sum of mental labour involved in the system of competitive examinations, to grudge the

expenditure of a little additional effort on a technique which professes to bring to book, and test the figures of the examining bodies who are responsible for the direction of that labour.

Of this technical apparatus the following is the essential principle: When a compound mark is formed by the addition of several marks in different subjects, the manner of divergence, or law of error, appertaining to the compound is of one and the same general type, whatever the type of the particular laws appertaining to the several components. For instance, let the several subjects be geometry, history, Latin prose, &c., and let the law of error proper to each of these subjects be obtained by observations such as those which have been adduced in the preceding pages. Then the compound (mark in geometry + mark in history + mark in Latin prose + &c.) will vary with the change of examiners according to a law of error not in general identical with that of the components, but of a certain normal universal type which may be, and is often, called *the law of error*.

Unfortunately I have not enough statistics relating to actual examinations to verify this theorem directly, but it is easy to institute an imaginary examination which will exemplify the theory perfectly. Let us suppose that in each of ten subjects, any mark from 0 to 9 is assigned at random, say by putting down the first digit one lights upon in a mathematical table or page of statistics. The law of error or divergence in each particular subject is then very simple. It might be expressed by the following scheme:—

X	X	X	X	X	X	X	X	X	X
·5	1·5	2·5	3·5	4·5	5·5	6·5	7·5	8·5	

This means that, if all examiners were to mark in this perfectly random way which has been described, and in which it is believed that some do now proceed, then we might expect that out of a hundred examiners, marking the same work, 10 per cent. would give 0 (falling below ·5), 10 per cent. would give 1 (between ·5 and 1·5), and so on. If we erected equal perpendiculars at each of the points indicated by a Roman numeral, the grouping might be represented by the form of a rectangular wall.

Now consider a compound formed by adding 10 marks assigned in this fashion. The decades thus constituted would be grouped, not in the form of a rectangular wall, but rather in the form which the outline of a tumulus or regularly shaped mountain may offer to the view. The law of the compound which may be deduced from the nature of the components is figured in the annexed scheme:—

II	VII	XVI	XXV	XXV	XVI	VII	II
27	33	39	45	51	57	63	

If we erect at each Roman numeral a perpendicular to the line on which they all are, and join the tops of the perpendiculars, there will begin to appear the curve which has been alluded to, which a lively French statistician likens to the outline of a *gens d'arme's* hat. It may be contrasted with the law according to

which the components, the simple digits, are arranged by likening the latter to the outline of a pork-pie hat. How different the law of the components is from the law of the compound may be realised by observing that the error of any component digit, *e.g.*, 0 or 9, measured from the mean value of digits taken at random, namely 4.5, may easily amount to 100 per cent. of that value; while the error of the compound cannot well exceed 60 per cent. of the mean value of ten random digits put together, namely 45. The chance of so great a divergence as 27 above or below 45—that is the sum of ten digits proving less than 18, or greater than 72—is exceedingly small, less than one in two hundred.

Not only is the *gens d'arme's* hat different from the pork-pie, but also it remains constantly in fashion, whatever changes may be made in the component form. Instead of a pork-pie for the shape of the component, we might have a hat all blown on one side like the arrangement of the guesses as to the number of five pound notes which counterpoise a sovereign; or a hat mostly symmetrical, but with a sort of rim or ribbon projecting on one side, as in the case of the estimates of height. The only condition which the particular hats need fulfil is that they should not resemble a lady's hat in changing fashion very rapidly. They must be supposed to remain constant at least long enough to admit of as it were a composite portrait being taken of them. That composite portrait will then generally be one and the same, *sui generis*; the compound which is formed by putting together a great number of items each fluctuating according to any particular definite law, will in general fluctuate according to a constant universal law, the unchanging fashion of the *gens d'arme's* hat.

It is not meant that the exact configuration, but the general make will be same in all cases. *Gens d'armes'* hats may differ from each other, just as several ovals which have different eccentricities, yet all belong to the same genus, ellipse. Suppose it known that all planets move in ellipses; an astronomer on discovering a new planet would merely have to determine by a few observations of what sort the ellipse is, in order to be able to determine unobserved parts of the orbit, and predict the future behaviour of the planet. This is the sort of advantage which the theory of the *gens d'arme's* hat confers on our calculations. By observing a certain number of data we are able to determine the characteristics of the hat appertaining to any sort of compound. Thus, in the case of the digits instanced, we know *à priori*, or we might have found my observation, the law of dispersion for each of the components which go to make up a decade. From those data we can deduce the variety of *gens d'arme's* hat which covers the case under consideration. Knowing that variety, we can make that sort of prediction which is expressed on a preceding page in the scheme which shows the law of the compound, as deduced from the nature of the components. Thus we may expect that, out of a hundred decades, not more than two will be either greater than 63, or less than 27. In other words, the betting is about fifty to one against any one decade taken at random exceeding the mean value 45 to the extent of 18; and the odds are the same against an equal error in

defect. The odds against an error in excess being greater than 12, are rather more than ten to one. We can similarly deduce the probability of any assigned degree of error occurring.

How accurate this prediction is may be shown by actual verification. For this purpose it will be best to observe a rather larger number of decades than a hundred. I have taken the trouble of forming two hundred and fifty decades by picking out at random 2,500 digits from a table of logarithms, and adding them in batches of ten, just as they came. The arrangement of these two hundred and fifty decades is described in the accompanying scheme, where the ordinary figures 27, 33, &c., refer to the magnitude of the observed decades; the Roman numerals above designate the distribution which occurred in my experiment; that is, there were five of the decades which I formed below 27, nineteen between 27 and 33, and so on. The Roman numerals *below* indicate the theoretical distribution deducible from (or rather deduced from the

Fact	V	XIX	XL	LX	LXVII	XXXV	XVIII	VI
	27	33	39	45	51	57	63	
Theory	VI	XVIII	XXXIX	LXII	LXII	XXXIX	XVIII	VI

same sources as) the percentages stated in a former scheme.⁸ Whoever compares the prediction with the facts can have no doubt about the genuineness of the theory.

After this tangible proof I hope that no Didymus will challenge the further assertion that what has been demonstrated for *sums* is demonstrable also for *differences*; that, if a number of items like digits be connected by *either* positive or negative signs, the resulting quantity fluctuates according to the normal law of error. This is true, even when the items obey as it were a peculiar and private law, like the digits. It is *à fortiori* true when the items are already in their individual capacity subject to the normal law, or at least when they are getting on, so to speak, for that state of perfection: for instance, when the component items are themselves compounds, either of a great many elements, or of a few—say two or three. It is in these latter forms chiefly that we require the additional theory relative to differences which has just been announced. It may be employed in solving a particular problem belonging to the subdivision of examinations in a single subject, to which we shall revert for a moment.

The problem thus lying a little out of our main road, but which it seems best to approach from the point which we have reached, may be thus put: Suppose two candidates, A and B, are examined by one examiner, X, in a subject admitting of as much diversity as the Latin prose which we have instanced; if A comes out above B by so many marks, or such and such a percentage of the mean between their two marks, what is the probability that an equally competent examiner, Y, appraising the same work, would have brought out B above A? The solution of this problem is facilitated by the theory that differences tend to obey the normal law of error.

⁸ See p. 464.

Suppose you took at random three digits, and formed a triplet by adding them together. The arrangement presented by the various values which this expression will assume in the long run, has a rough general resemblance to the pattern form of the *gens d'armes's* hat. Now take the difference between two triplets. The new form will approach more nearly to the correct fashion. The difference of two triplets is just as much in the fashion as the *sum* of six digits. This principle comes to our aid, when we consider the differences likely to exist between examiners in their estimate of the differences between candidates. A set of marks, like the 16 to which I have referred as given to the same piece of geometry, or the 28 given to the same piece of Latin prose, is, to begin with, grouped about its central value in a manner roughly approximating to the normal law of error. Accordingly the *difference* between the marks of two candidates under any one examiner is a quantity which varies—with the accidental appointment of one examiner rather than another equally competent—in a manner still more conformable to the ideal law. But the quantity with which we are specially concerned is the difference between any two examiners who might be appointed in their estimation of the differences between the two candidates examined. We want to ascertain the danger of an occurrence like the following: Candidate A being really higher than candidate B by 10 per cent., examiner X commits an error of *plus* 10 per cent. $\left(\text{per cent. of } \frac{A+B}{2}\right)$ in estimating $A - B$, and brings out A 20 per cent. above B; while examiner Y commits, as it happens, an error of *minus* 10 per cent., and brings out A equal or just below B. As long as the difference between $(A - B)$ according to X and $(A - B)$ according to Y may possibly equal 20 per cent., it is possible that, although A is brought out 20 per cent. higher than B by one examiner, the verdict may be reversed in favour of B by another equally competent examiner.

Well, this difference between differences is, by the principle denounced, doubly amenable to the general law. Accordingly I have deduced with considerable confidence that in an examination of one subject, admitting as much diversity of judgment as the Latin prose, which has been so often instanced, a difference of 25 per cent. between the marks of two candidates, may be accidental and liable to reversal. Suppose, for instance, that under one examiner, candidate A obtains 90, and candidate B 70. That is a difference of 25 per cent. of the average between the marks, namely 80. Well, it is not a very improbable event—say about as unlikely as throwing heads at pitch farthing six times running—that under another examiner, the order of the candidates might be reversed, B coming out above, though probably not high above, his rival.

The particular case of an examination in a single subject having been solved, I now proceed with the general case in which distinction is determined by the sum of the marks in different subjects.

II.—*Canadian Immigration and Emigration.*

THE following is an Annex to the Report of the Canadian Minister of Agriculture for 1889:—

“Sir,—In considering the relations of the figures of immigration from the published records kept since Confederation, it should be borne in mind that no attempt has been made to furnish the corresponding figures of emigration; and there is now no mode by which these can be ascertained. But if the totals of the ins and outs by every Canadian railway and steamship line carrying passengers were obtained, the result would be the net immigration or emigration.

Canadian Emigration as shown by United States Census.

“The figures established by the decennial censuses of the United States, as compared with corresponding facts in Canada, throw much light on the subject, and present points of great interest.

“The following tabular statement shows the numbers of ‘British American nativities,’ as enumerated by the United States census at four decennial periods:—

British Americans in United States (U. S. Census volumes).

Years.	Numbers.	Numerical Increase.	Increase per Cent.
1850.....	147,711	—	—
'60.....	249,970	102,259	69'22
'70.....	476,572	226,602	90'65
'80.....	710,575	234,003	48'19

“It appears from this statement that the period of greatest activity in the emigration from Canada, in relation to population, was between the years 1860 and 1870. The fact is also established that there was in the United States in 1880 the number of 710,575 persons born in British America, a figure equal to 16'40 per cent. of the population of Canada at that time.⁹

“It appears, on the other hand, that the total number of persons not born in Canada, but living in it—that is, immigrants, as found by the census of 1881, was 609,318; figures equal to 14'08 of the population, as enumerated.

“I assume the substantial correctness of both the recorded enumerations. But I think it well to say that, if there is likelihood of either being in excess, it is that of the United States, for the reason that the enumerators were paid simply by the tale of heads, while in Canada such mode of payment was thought by Dr. Taché to be a strain of temptation too strong to be put on

⁹ “The ‘nativities’ from Newfoundland are not included in the above United States figures. Including Newfoundland, the total figures of British American nativities are 717,150, by the census of 1880.”

them, the numbers of persons recorded by each census enumerator in Canada being only one of the grounds on which payment was made for services, and care was taken to put that in such a way as not to be an inducement to exaggeration.

"It may be generally stated that the immigrants to Canada, as shown by the census figures, are a set off, or counterpoise to the emigration of Canadian 'nativities' to the United States; but the immigration is not, as has been contended, a simple substitution, or replacement, in the sense that it occupies the place of the out-goers. The records furnish sufficient proof of this, as I will presently show.

"It is plain, from a study of the facts, that the movement of Canadian 'nativities' to the United States, as shown from the four decennial census records above recited, has been in obedience to what it is not too strong a term to say is a law of population, which is common to the continent; and a law, moreover, that has equal force in the agricultural counties of England.

Emigration from States in similar position to Canada.

"To substantiate this position I will first take emigration from States in corresponding position to Canada, to the newer Western States, as established by the United States Census of 1880. I select what is termed the North Atlantic group of States. The emigration of 'native-born,' or citizens from the States named, was as follows; the percentage of such emigration to population in each of the States being as follows:—

*Emigration of Native-Born United States Population from the following named States by United States Census, 1880.**

	Numerical.	Per Cent.
Maine	182,257	24
New Hampshire.....	128,505	35
Vermont	178,261	41
Massachusetts	267,730	20
Rhode Island	49,235	24
Connecticut	140,621	26
New York	1,197,153	25
„ Jersey.....	180,391	20
Pennsylvania	798,487	19
	3,122,640	Mean 25.65

* In this and the three following tables I have taken the calculations of percentages from *Scribner's Statistical Atlas*, but I have made a general verification by comparisons with United States census volumes.

"We have thus established the fact of a numerical 'exodus' from the above named nine important States of 3,122,640, or a mean of 25.65 of their total population. The great State of New York had lost at the period named no less than 1,197,153 of its native-born population—that is, 25 per cent. of the total of the

State. New Hampshire had lost 25 per cent. of its population; Vermont, the depleting drain of 41 per cent.; and if we take the central State of Ohio (which, perhaps, has the nearest analogies for the purpose of comparison with the Province of Ontario), we have the fact of an 'exodus' of 941,219 of its native-born population, or 28 per cent. of the whole, at the period named.

Western States receiving the 'Exodus.'

"It is next of interest, for the purposes of this enquiry to see where this great 'exodus' has gone. The fact is shown by the following table:—

Native-Born Immigration into the following named States, from the United States Census, 1880.

	Numerical.	Per Cent.
Illinois	784,775	32
Michigan	445,123	36
Wisconsin	216,895	24
Minnesota	210,726	41
Iowa	625,659	46
Missouri	688,161	35
Kansas	652,944	74
Nebraska	259,288	73
	3,893,571	Mean 45

"The United States census affords the means of extending the figures of both the above tables to all States, but it is not necessary to go further to establish the fact of 'exodus' from the group of States on the North Atlantic seaboard to the above named group of agricultural States. These latter had received from the former a numerical inflow of native-born population amounting in the aggregate to 3,893,571, or a mean of 57 per cent. of their total population.

Distribution of Population in the United States.

"It is next of interest, in this relation, to establish the general fact of distribution of population in the United States, which shows how enormous has been the drain from the old States on the eastern face of the continent, to the great prairie region, which has been called the Interior Valley, between the two great ranges of mountains.

Distribution per Cent. of Population in the United States, Census 1880.

	Per cent.
Atlantic plain	29.84
Appalachian region	13.38
Interior valley	53.50
Cordilleran region.....	3.28
	<hr/> 100.00 <hr/>

“Roughly speaking, the Atlantic Plain, which contained almost the whole population of the old thirteen States before the settlement of the prairie region, had, in 1880, only retained 29·84 per cent.; the Appalachian and the Cordilleran Regions embracing, generally speaking, the mineral resources of the United States in the east and west, contained only 16·64 per cent. of population at the period named, while the Interior Valley, embracing the great prairie region between the two mountain ranges, contained 53·50 per cent. of the whole population of the United States. It is thus shown that the filling up of vast areas of agricultural lands was the attraction which caused the great accession of population. This Interior Valley is the analogy of a large portion of the Canadian North-West, now commencing to be filled up.

Similar movement in England.

“As bearing on what I have called the law of movement of population from agricultural districts, when population in them has reached a certain density, we have corroborative facts of great importance from England. I recently read in the weekly edition of the *London Times* of 27th March, 1889, a report of a paper by Dr. William Ogle, of the Registrar General's Office of England, containing facts on this subject. He took fifteen of the leading agricultural counties in England, and, omitting from them every urban district with a population of 10,000 or upwards, he showed that there had been a decline in the population of these counties in the thirty years from 1851 to 1881 of 1 per cent.; but taking the period of fifty previous years, when the population was less dense, from 1801 to 1851, there had been an increase of not less than 73 per cent. Dr. Ogle particularly noted that there was no change in the relation of the birth-rate to the death-rate, the decline in population being due to migration or emigration, or both, amounting to an exodus. He especially remarked, respecting the county of Huntingdonshire, that being one which is intensely rural, that its population had increased between 1801 and 1851 by about 73 per cent., but that in the period between 1851 and 1881 there was a diminution of population of 11·8 per cent. The numerical migration or emigration from this county in the years named amounted to 25,937, arising from the fact that the land in the then conditions was not able to sustain the labour of those who left. This large exodus from that county consisted mainly of young people of both sexes. And it was, as Dr. Ogle further pointed out, the very flower of the population that left—that is, persons under 20 and 30 years of age, leaving a very much larger percentage of persons over 55 years in proportion to population, a fact which has placed the population which remained in a weaker position.

Movement of Population to United States Cities.

“It is next of interest to notice the movement of population in the United States from the rural districts to the cities. This has

been very remarkable, and it is very clearly shown by the following table :—

United States Urban Population in Cities of 8,000 and over, at the Decennial Periods named.

Years.	Total.	Urban.	Ratio per Cent.
1790.....	3,929,214	131,472	3'3
1800.....	5,308,483	210,873	3'9
'10.....	7,239,881	356,920	4'9
'20.....	9,633,822	475,135	4'9
'30.....	12,866,020	864,509	6'7
'40.....	17,069,453	1,453,994	8'5
'50.....	23,191,876	2,897,586	12'5
'60.....	31,443,321	5,072,256	16'1
'70.....	38,558,371	8,071,875	20'9
'80.....	50,155,783	11,318,547	22'5

“It is thus clearly established that the movement of increase of population in the cities has grown steadily and rapidly from the first census taken in the United States in 1790 to the last in 1880, from the ratio of 1 in 33 to very nearly 1 in 4. There cannot be any doubt that the great drain of rural population from the old States on the Atlantic seaboard would have been very much more severe if a considerable portion of it had not been retained in the cities by commercial and industrial pursuits; the urban pursuits themselves having been vastly stimulated by the demands arising from the wants of the great areas of territory opened up by agricultural occupation, a process which, while it made a serious drain of population on the one hand, caused a quickening of energy on the other. It is undoubtedly true that these industrial pursuits thus stimulated, have been the chief cause of the attraction of the French Canadian emigration from the Province of Quebec to the manufacturing New England States; while the opening of the great areas of agricultural lands in the new States of the central region, which caused the drain from the older States, at the same time, but in a less degree, caused the emigration from Canada.

The States containing Canadians.

“Coming to the movement of Canadians to the United States, the volume of which in three decennial periods I have already stated, I have compiled from the United States Census of 1880 a record of Canadian ‘nativities’ (eliminating Newfoundland) found in the following States of the Union, arranged in the order of numbers :—

*'British American Nativities' in the following named States,
Census of 1880.*

States.	Numerical.	Ratio per Cent. to Population of each State.
Michigan.....	148,770	20·93
Massachusetts	116,430	14·96
New York	83,517	11·75
Maine	36,989	5·20
Illinois	33,870	4·61
Minnesota	29,475	4·13
Wisconsin	28,808	4·05
New Hampshire.....	27,079	3·81
Vermont	24,611	3·46
Iowa	21,019	2·95
California	18,405	2·59
Rhode Island	18,156	2·55
Connecticut	16,380	2·34
Ohio	16,026	2·25
Kansas	12,496	1·75
Pennsylvania	12,203	1·71
Dakota	10,661	1·50
	654,895	—
Aggregate per cent.....	—	90·54

"In the above named seventeen States were found over 90 per cent. of Canadian emigrants at the date of the last United States census, and very nearly 50 per cent. of the whole were found in three States—Michigan, Massachusetts, and New York. The French Canadian immigration went mainly to the New England States.

"It has been stated that the outflow of Canadians to the United States continues with even greatly increased energy, but I cannot see signs of that. We have an important test in the facts contained in the quinquennial census of the State of Massachusetts, taken in 1885. The figures in the following table are of interest:—

Canadians in the State of Massachusetts.

Years.	Total.	Numerical Increase.	Per Cent.
1870.....	66,216	—	—
'80.....	116,430	50,214	75·83
'85.....	143,768	27,338	23·48

"Considering the relation to the respective total populations, the outflow is less. I think the conditions of the cause are changing.

Americans in Canada in relation to Population.

"In considering the relative movements referred to, another comparison may be made; the Canadian 'nativities' in the United

States, according to the last United States census, reached the figure of 14 per 1,000 of the population, while the number of persons of United States birth found to be settled in Canada, according to the census of 1881, was 18 per 1,000; and in the Province of Ontario, 23 per 1,000.

Nature of the Movement of Population.

“The nature of the movement of population from agricultural districts, in the United States, in England and in Canada, is not difficult to understand. If a farmer has a family of sons and daughters numbering from 5 to 7, they would not all, when they grow up, stay on the farm, for the reason (1) that it would not be able to support them according to their expectations; and (2) because they become seized with an ambition to set up and act for themselves. The sons, with perhaps the exception of one, who might stay on the homestead, would either move to obtain land for themselves or find occupations in urban pursuits; and the girls also, in the same way, to a large extent, would seek occupation or marry. It is thus we have seen that agricultural counties in England have increased in population until reaching a certain density, when it remained stationary or declined. When a population is sparse and there is unoccupied land, the land is rapidly taken up and the population rapidly increases; but when the vacant lands become occupied a surplus of population begins to be thrown off. In the Province of Ontario, for instance, we saw the population increasing with great rapidity, by leaps and bounds, when the country was filling up, from 1831 to 1861. Afterwards the increase went on more moderately, when there was less land to be taken up, and population became more dense. An emigration, then, began to be thrown off. These facts will clearly appear from a consideration of the following figures taken from the censuses:—

Population and Increase per Cent. in Province of Ontario.

Years.	Population.	Increase per Cent.
1841.....	445,688	92
'51.....	952,004	109
'61.....	1,396,091	46
'71.....	1,620,851	16
'81.....	1,923,228	19

“I take Ontario simply for an illustration. The same class of facts exist as respects other provinces in Canada and individual States in the neighbouring Union. The experience of the Australasian colonies is to same effect. And Dr. Ogle shows, as before stated, the agricultural counties in England are governed by the same law of movement.

Emigration not necessarily a sign of Weakness.

“Emigration from a State or province, even when large figures are reached, is not simply or necessarily a sign of decline of pros-

perity or vitality in the population. It may be, in certain conditions, the reverse. England is a very wealthy country, with a dense population and a large emigration; New York is a very populous and prosperous State, with rapidly increasing wealth, yet it had lost by emigration or exodus from its borders, at the date of the last United States census, in round numbers not less than a million and a quarter, or 25 per cent. of its native population; and Ontario is a prosperous and rapidly progressive province which, when its population reached the figure of a million, and when it had begun to accumulate wealth, began to throw off an emigration, and its decennial increase dropped from the ratio of 92 and 109 to 16 and 19 per cent. It may be assumed beyond question that its realised wealth was not nearly so great when the decennial increase of population was 92 and 109 as when it was only 16 and 19 per cent. but then it had larger areas of vacant land to settle. It was in fact the accumulation of wealth and population which enabled the emigration to take place. Important improvements in agricultural methods, which may come from the experimental farms, or increase in urban pursuits, would imply a demand for employment of more dense population, as we have seen is the fact in England.

Relative extent of Emigration from States and Provinces.

"The relative emigration from the Canadian provinces, as before shown, has not been nearly so large as that from the group of States on the Atlantic seaboard. We have seen by the figures established by the census returns, that the emigration from the Canadian provinces has been very nearly 2 to 1 less than that from the group of prosperous States of the American Union in a corresponding position. The inference from this undoubted fact is that the movement has not been influenced by the frontier line except adversely. The immigration figures of last year, and particularly those accompanying customs returns, show the beginning of a movement of a reflex current, which, judging from the past experience of the continent, will, in the immediate future, become a much more important stream, unless the vast areas of the Canadian North-West are not such as will attract settlement—which is not the fact—or unless the movement should receive some important check.

Number and Value of Immigrants at last Census.

"The total number of persons living in Canada on 4th April, 1881, who were born in other countries, such being, therefore, immigrants, was 609,318, equal, as stated, to 14.03 per cent. of the total population. In relation to this fact, although not strictly speaking a movement of population, it is within the scope of this report to show what this immigration implies in relation to increase of wealth of the Dominion. It has been stated on the authority of the Bureau of Statistics at Washington, and our experience generally coincides, that, as an average, each immigrant brings a value of \$60 into the country. These 609,318 would therefore have brought \$36,559,080. Counting each family at an average of five persons, we have in the number stated 121,894 families. It is

a very moderate estimate to assume that the average immigrant family, successfully settled, becomes an annual producer of value to the extent of \$400 each. I think this figure might be placed higher, as very often the women and children are also producers by wage earning; but simply assuming the moderate estimate I have stated, we have an amount of annual creation of wealth from these immigrant families equal to \$48,757,600. If, further, we follow a method of the Washington Bureau and capitalise the value of the immigrants in Canada as shown by the census enumeration of 1881, at \$1,000 each, we have the large figures of \$609,318,000. The accretion of value in the Dominion from immigration is therefore simply enormous, and it has undoubtedly in the past vivified every interest and industry in the country, including the wages paid to working men.

Influence of Immigration on Percentage Increase of Population.

“In considering the influence of the immigration as bearing on the figures of ratios of increase of population in Canada, it is well to keep in mind that the influence which moved the outflow has been quite distinct from that which has brought in the inflow; and that the inflow, as already stated, has been a counterpoise rather than a simple substitution. The outflow would have obeyed the law which produced it, if the inflow had not come. There is nothing to show and no reason to believe that the increase of population in Canada in the last decenniad would have been greater than that in the adjoining New England States of Maine, Vermont, and New Hampshire. The first named of these States showed a decline in the same period of .2 and the latter two a gain of only 5 and 2 per cent. respectively, instead of the large comparative increase of 18.97, or, in round numbers, 19 per cent., as shown by Canada. England and Wales showed only 14.34, and Scotland 11.14 per cent. increase in the same period; while Ireland, a more purely agricultural country, showed a decline of 4.69. There is no reason why the rural portions of the old provinces, where there are no more considerable areas of unoccupied or unappropriated land open for settlement, should not have shown the same kind of movement of population as the rural districts in England, as shown by Dr. Ogle. There is no reason to believe that the vital force of the population in Canada is greater than that in the New England States or the rural districts of England. It is to the immigration, therefore, that we owe the large increase of 19 per cent. in our population during the last census decenniad. If we deduct the immigrants from Canadian natives, that is, 14.08 per cent. of the whole, according to the census of 1881, we should only have an increment of 4.89, a trifle less than that of the New England State of Vermont. The difference between this figure and that which would appear if the natural increase were stated is the emigration in obedience to the law of movement before referred to.

“In relation, therefore, to the two great factors of wealth and population in Canada, immigration is proved to have had a simply enormous influence; and the comparatively small cost that has been incurred in inducing and guiding it, is very trifling in com-

parison. It is scarcely as dust in the balance when compared with the demonstrable fact of value of result.

"I have taken the figures of the immigrants found by the last census for the purpose of these remarks, for the reason that they avoid a controversy which has arisen respecting the published immigration figures of the Department; and also because these are simply returns of immigration without including emigration; but a fair consideration of the meaning of those figures brings the same result.

Manitoba and N.-W. Immigration Question.

"You desire that I should furnish you with some remarks on immigration statistics furnished by the departmental reports in relation to Manitoba and the North-West between the years 1881 and 1886 inclusive; and that I should show, at the same time, how the figures compare with those of the quinquennial census of Manitoba in 1886, and that of the three provincial districts of Assiniboia, Saskatchewan and Alberta in 1885. The figures of immigration, as stated in the departmental reports, for the years named, were as follow:—

Immigration to Manitoba and the North-West in the Years named.

1881	22,001
'82	58,751
'83	42,772
'84	24,040
'85	7,240
'86	11,599
Total in six years.....	<u>166,403</u>

"In order to make a comparison of these figures with those of the census returns referred to, we must, to avoid duplication, have reference to the months in which the censuses were taken, the immigration figures being for calendar years. We have thus to account for nine months of the immigration in 1881, the other three months being included in the census returns; for seven months in 1886. The elimination from the immigration figures to make the parts of calendar years correspond with census years, to obtain an accurate basis of comparison, as above stated, can only be made by estimate based on an appreciation of the activity of the immigration movement during the months in question. I have, on a consideration of the facts, made an estimate, that the figures of immigration which the Department has to account for, in a comparison with the census figures according to its returns, amount to 152,962.

"It is well to state that much less than the half of the whole of these numbers were set down as immigrants from places outside of Canada in the Departmental reports referred to, the remainder being simply migrants from the old provinces of Canada. That is, roundly speaking, 76,480 immigrants and 76,480 Canadian migrants from the old provinces of the Dominion. The distinction is essential in considering the facts in relation to Canadian popula-

tion; and it is of interest in relation to the considerations arising out of those particular figures. I take, however, the whole of the 152,962 as those which I have now to account for in a comparison between the immigration and census figures of Manitoba and the Territories.

"The first point to establish to show the increase within the period referred to is the total population of Manitoba and the North-West Territories in 1881 and 1886 respectively. The figures are as follow:—

Combined Total Population of Manitoba and the North-West Territories.

1881	118,706
'86	196,424
Increase.....	<u>77,718</u>

"I may explain here that the natural increase of population is not taken into account in this report, for the reason that it was very small among the Indian and Métis population, which formed a large part of the factor of comparison for 1881, and natural increase was not a special feature of the crowds of persons who went in from that year to 1886.

"I think it well to explain that in making a comparison of the populations of the province at the two periods named, it has been necessary, for the purpose of accuracy, to eliminate the enumeration in the census district which was considered to belong to Manitoba in 1881, but subsequently ceded to the province of Ontario, for the reason that it was not again enumerated in 1886; and I think it well further to point out, as so much misapprehension seems to have arisen, that the census of three provisional districts only was taken in 1885, while that of the whole of the North-West Territories was taken in the decennial enumeration of 1881. There was found in those portions of the territories not taken in 1886, that is, in Athabaska, Keewatin, and the organised territories, a population of 30,931 in 1881. It is clear, therefore, that these figures must be brought in to make an accurate comparison. If we allow for one year's progress of the three provisional districts at the rate of increase in Manitoba (and this is, perhaps, too little to allow, as it happened that the year after the rebellion was one of very active settlement in these territories), we shall have the figures adjusted as I have above stated them.

"The issue then stands as follows:—

Immigration as stated by the Department	152,962
Census increase from 1881 to 1886	<u>77,718</u>
Immigrants and migrants to be accounted for....	<u>75,244</u>

How such Immigration and Migration are Accounted for.

"Divided as above stated, I have still to account, after deducting the census reported increase, for 37,672 immigrants and 37,672 Canadian migrants. I find the following sufficient reasons:—

"The position of the Pacific Railway construction is first to

be considered. The work had been carried through the Rocky Mountains and completed to the valley of the Columbia River long before the close of 1884, and a very active progress had been made, a progress approaching completion of the remainder of the railway to the Pacific coast. I stated to the committee, from information I had received, that it was estimated as many as 40,000 persons connected with the building of the railway, in one capacity or other, went into the north-west during the period of construction, and it is undoubted that very large numbers continued to go forward with the progress of the railway work after it passed the western boundary of Alberta and entered the province of British Columbia, which was not included in the census returns which were taken in 1885 and 1886. I cannot say with precision, nor can it be ascertained what those numbers were, but I can allege with positiveness that they were large, and materially affected the figures of the balance above stated. Very many of those persons who entered the north-west *viâ* Manitoba during the construction of the railway did not stay. I explained to the committee that these had been counted as immigrants, and I still think properly so, when the fact of their character was at the same time stated. I cannot specify the number of them who left, but I allege positively that these materially affected the balance I have to account for.

"It is known that settlement in the province of British Columbia was active during the years named, and that very many immigrants and migrants went in *viâ* Manitoba by the Canadian Pacific Railway. We have no means of ascertaining the precise figures of these, but it may be alleged with positiveness that they were a material factor in the immigration figures above stated. The estimated population of the province of British Columbia by the Department on the 4th April, 1887, that is the first year after the figures of immigration at 31st of December, 1886, was 114,286; the census records in 1881 gave the population at 49,415. The difference between these figures is 64,827, and the consideration which arises from this fact is material to the matter in discussion. We shall have the next decennial census returns in a few months, therefore it is perhaps not worth while now to enter into any argument as to the correctness of the estimate.

"It is beyond doubt that during the years of the excitement of the 'boom' in Manitoba many thousands from all parts of Canada, and from outside of Canada, went in to make their fortunes in all sorts of ways, and these were not improperly counted as immigrants. It is equally well known that after the collapse of the 'boom' they again left in thousands. I cannot say how many, but the fact is very material to bear in mind, in order rightly to understand the question in issue. Such 'booms' and collapses have been common in the settlement of the western States of America, and the circumstances connected with that in Manitoba are neither a reflection on the correctness of the immigration figures relating to it, nor the suitability of Manitoba as a field for settlement.

"It is well to bear in mind that a large portion of all those

who returned to the old provinces after the 'boom' were Canadian migrants, and therefore they were not lost to the population of the Dominion.

"It is next to be considered that the census of the three provisional districts in 1885 was taken during the year of the Métis rebellion, long before the hot excitement of that event had passed away—a condition highly unfavourable even for finding the ordinary population of those districts, as it is known that many settlers left in consequence of the rebellion who afterwards returned or had their places filled by others.

"The whole of these circumstances are reasonably and amply sufficient to account for the disparity of figures between the census and immigration returns, without affording, as I have already said, any ground either for reflection on the figures or for disparagement of the country as a field for settlement. We have seen within a few months in the United States a rush of immigrants into the district of Oklahoma when it was opened up. That was an excitement somewhat similar to the Manitoba 'boom,' and men under its influence went there by thousands; but when the collapse came they returned by thousands. There is nothing in that circumstance, however, affecting the propriety of classifying those who went in as immigrants; nor was yet even the exodus out a reflection on the suitability of that country for settlement.

"Upon a careful review of the immigration figures, as they were reported to the Department, and the very great activity—I may almost say the rush of the movement between the years 1881 and 1883 inclusive—and after applying to them the test of criticism, I have no doubt in my mind as to their substantial accuracy. The importance of that movement which, year after year, I examined, could not have been described by smaller figures. But these were never claimed to be anything more than approximate, and were always so stated, the information having been obtained by questions and count, with the single intention of ascertaining the truth as nearly as possible. I may further observe that the total movement of travel, in the years named, was much larger than the figures above stated, as was shown in the reports, but after the allowance which was made for this, and when the number of persons for whom the character of immigrants was claimed by the agents is examined, there is nothing which shows unreasonableness in the statements.

Comparison with Australian Colonies.

"The figures of immigration are very distinct in all countries which receive large numbers of immigrants, from those of emigration. Take the Australian colonies, for instance, entirely surrounded by ocean, a fact which affords easy means of ascertaining inflow and outflow. The latest returns which I have give the following results:—

<i>Immigration and Emigration in Australia, Nine Years.</i>	
Total immigration by sea from 1879 to 1887	1,846,592
Emigration by sea in the same period	1,283,787
Excess of immigrants over emigrants	<u>562,805</u>

“And these figures are accompanied by a note to the effect that the emigration by sea was probably in excess of the figures recorded.¹⁰ We have therefore the fact that not nearly one-third of the numbers reported to have arrived remained. The disproportion between the immigration and emigration as shown by these figures is enormous. It far exceeds the disproportion as above shown between the increase of population accounted for by the census returns and the immigration reported by the agents of the Department of Agriculture, even in the not ordinary circumstances of Manitoba and the North-West Territories as above stated, and including the migration from the older provinces—the figures in Australia relating purely to immigration and emigration, as established by a sea line.

“The figures of expenditure for immigration service by the Australian colonies are also of much interest in comparison with our own. I have at hand such expenditure of all the Australian colonies from 1879 to 1887 inclusive. It is as follows:—

Expenditure for Immigration by the Australian Colonies.

	\$
1879	2,121,544
'80	830,713
'81	623,483
'82	1,207,853
'83	2,446,346
'84	1,409,303
'85	1,267,994
'86	1,246,806
'87	1,124,320
Total in nine years.....	<u>12,278,362</u>

“We have thus an expenditure of over twelve millions and a quarter of dollars for immigration purposes within the years named. These figures show an expenditure far in excess of that of Canada for the same service. The expenditure of Canada for the same period (which was that of largest expenditure) for the same service, including all establishments in Europe and Canada, was \$2,682,452.

“The population of all the Australian colonies at the last general census of 1881 was 2,742,550; but it was then very rapidly increasing by immigration, the increase over the previous enumeration in 1871 being 38·87 per cent.

I have the honour to be, Sir,

Your obedient servant,

JOHN LOWE,

Deputy Minister of Agriculture.

DEPARTMENT OF AGRICULTURE,

OTTAWA, 14th April, 1890.

To the Honourable John Carling,
Minister of Agriculture.

¹⁰ “By Mr. Hayter, one of the most eminent of the statisticians of Australia.

APPENDIX.—*British American Emigrants in Second Degree in the United States.*

“As cognate with the subject of the foregoing report, it may be interesting to look at the United States’ claim, as stated on page 674 of the United States Census of 1880, relative to the numbers of British Canadians in the second degree, that is the children of the Canadian emigrants in the United States. The following table is given:—

Number of Persons in the United States, 1880, having One or Both Parents British American.

States and Territories (Population, 26,354,124).	Having British American Fathers.	Having British American Mothers.
Alabama	451	301
Arkansas	920	644
Arizona	500	533
California	20,333	19,275
Colorado	5,517	5,614
Connecticut	22,887	22,436
Dakota	10,145	10,230
Delaware	241	231
District of Columbia	538	519
Florida	561	433
Georgia	522	327
Idaho	682	614
Kentucky	1,205	1,003
Louisiana	1,350	878
Maryland	1,053	1,053
Massachusetts	152,350	157,248
Minnesota	40,311	38,628
Mississippi	460	302
Missouri	10,855	9,847
Montana	2,772	2,509
Nebraska	9,383	9,867
Nevada	2,793	2,784
New Hampshire	34,302	34,113
„ Mexico	344	230
North Carolina	262	290
Oregon	4,328	3,560
Rhode Island	23,533	24,158
South Carolina	179	141
Tennessee	825	576
Texas	3,111	2,468
Vermont	43,253	41,500
Virginia	685	588
Washington	3,612	3,429
West Virginia	412	348
Wisconsin	44,939	43,015
Wyoming	537	524
Total by enumeration	446,151	440,276
Remaining States and Terri- tories (population, 23,801,659) estimated	493,096	491,132
	939,247	931,408
Number of resident persons } born in British America	—	717,157

"If we take the State of Massachusetts, census 1885, where there is large Canadian family settlement, and a population of 143,768 Canadians, we have the following results:—

"J. L."

THE following is taken from the *Statist* of the 21st June, 1890:—

“Abstract of the Report of the board of directors, read by M. Ferdinand de Lesseps, at the Annual Meeting on 4th June, 1890.

“In stating last year that the expenses of the undertaking, after twenty years’ working, only amounted to $11\frac{1}{2}$ per cent. of the receipts, the directors said that the special and characteristic advantage of the working of canals is that this constant, and it might be said indefinite, progress is obtained without any appreciable increase in the expenses, no rails being used or coal required, and but a very slight increase being necessary in the staff, compared with the enlarged receipts. The directors are, however, bound to say that the work of the board is greatly facilitated by the zeal of the staff of all ranks; and such devoted services have led them to consider how they can assure the staff that security in the future which they merit. The scheme adopted (which is detailed in the report) was shown at the Exhibition of 1889, and was awarded a gold medal by the jury of the Section de l’Economie Sociale; the total charge on the company’s funds to-day does not

exceed 30,000 frs., whilst the staff are relieved from any anxiety as to the future of those dependent upon them in case of inability to work or of death.

“ Financial.

“ Receipts and Expenses.—The receipts for the year 1889 were 69,765,492 frs., and the total expenses were 32,552,671 frs., leaving a balance of 37,212,821 frs.

“ Maintenance and Improvement.—The outlay on these accounts was for the year 9,593,683 frs., which amount was provided by the issue of 60,000 three per cent. debentures (second series), from which issue a sum of 13,200,000 frs. is available for like purposes during 1890.

“ Working.

“ Transit and Navigation.—During 1889, 3,425 vessels passed through the canal, the dues producing 64,412,511 frs.; the passengers numbered 180,594, the receipts being 1,805,940 frs.; and the sum of 373,737 frs. from other sources brought the total receipts for the transit service to 66,592,189 frs. The number of vessels going through the canal in 1889 for the first time was 265, an increase of 38 per cent. on the previous year. The electric light was employed by 2,457 vessels (71·74 per cent.) to enable them to continue their passage by night; as compared with 1,608 (46·74 per cent.) in 1888. In 1889 the average time occupied in the passage of the canal was twenty-six hours forty-four minutes, a reduction of four hours one minute on the average time of the year before.

“ The Domains.—The receipts from the sale and rent of land belonging to the common domain were respectively 891,207 frs. and 136,391 frs., and of the private domains 131,539 frs. and 265,019 frs., respectively. The church at Port Tewfik was opened in July; the schools are now attended by 77 children. The hospital has received, from its opening in July, 1888, 537 patients, of whom 10 only had died. New buildings for the workmen have been erected at two of the sidings and at Port Tewfik.

“ Water Services.—The receipts at Ismailia were 307,602 frs., and at Suez 123,848 frs., increases over 1888 of 41,356 frs. and 6,101 frs. respectively.

“ Maintenance and New Works.

“ Maintenance.—The canal, with its sidings, the roadstead, and the channel at Port Saïd, have been kept at their proper state of efficiency by the periodical dredgings. The western pier at Port Saïd, which was much damaged by the violent storm of 14th—16th December, 1888, has been repaired, and the red light at the end of the pier has been reconstructed.

“ Improvements.—The temporary buildings erected when the canal was being made are being replaced by more suitable structures; and during 1889 new buildings were erected at Port Saïd, Kantara, El Ferdane, Déversoir, and at Kilomètre 152. The material for lighting the canal for night passages has been completed by the purchase of two steam vessels for supplying with gas

the Pintsch buoys. A tug of 1,000 horse power and four fast steam launches have also been purchased.

New Works.—The board have reason to hope that the loan of 100 millions of francs, authorised in 1886, and the remainder of the loan of 27 million francs (12,797,816 frs.), will cover all the expenses of the new works as well as the interest charges. The canal has now been deepened throughout its entire length to a depth of $8\frac{1}{2}$ mètres below the mean low water level of ordinary tides; and in consequence vessels drawing 7·80 mètres are now admitted to the canal. The work done includes the continuation of the widening of the canal to 15 mètres, which will be carried on with all speed; the rectification of several curves; the continuation of the digging of the new African basin at Port Saïd; and the completion of the new dock at Port Tewfik; whilst a considerable distance of the bank on the African side of the Port Saïd section has been protected by stonework, and nearly 200 mooring posts have been placed along the widened canal. The tramway mentioned in the last report as being constructed to connect the hospital at St. Vincent with Ismaïlia has been finished during the past year, and is now working: a branch line running to Lake Timsah. A new steamboat has been placed upon this lake for the use of the passengers. The cutting of the Sweet-Water Canal from Ismaïlia to Port Saïd is actively progressing, and a section of about 20 kilomètres is already finished; the water has been admitted to the first portion of the canal, and it is hoped that the next year will witness the diversion into Lake Menzaleh of the surplus water of the Ismaïlieh Canal. A railway is being constructed by the side of the Sweet-Water Canal from Port Saïd to Ismaïlia, which will render unnecessary the small service boats on the maritime canal, and will secure communication at any time between the stations and workshops on the canal and the offices, &c., at Port Saïd and Ismaïlia; it is anticipated that this important improvement will be finished in about two years.

“The board received on 17th May, 1890, a letter signed by twenty-four shareholders, requesting that the present annual meeting should be asked to consider the question of the tolls. The board would have liked to agree to the request, so that the shareholders might once for all have put an end to an agitation which had existed for some years; but they found that the statutes of the company did not permit the question of tariffs to be submitted to annual meetings, the board of directors being invested with all power regarding the amount and collection of tolls. The object of the requisitionists might, however, be attained by vote on the motion for the adoption of the report, which would not be taken until after discussion, and the result of which would be to approve or disapprove the action of the board in declining to interfere with the existing tariffs.

“The report concluded by expressing the regret of the board losing two of their fellow directors, M. Fréville and Mr. John Slagg, in whose places they had chosen MM. Donkin and Chabrières Arles, whose election would have to be confirmed by the meeting. The re-election was likewise recommended of the

retiring directors MM. Anslyn, Daubrée, Col. de Moucheron, and Sutherland.

"The report is followed by several appendices giving comparative statements regarding the traffic and the receipts. The following table shows the number of vessels using the canal, and the number of passengers carried:—

Year.	Number of Vessels.	Tonnage.	Number of Passengers.
1870.....	486	436,609	26,758
'75.....	1,494	2,009,984	84,446
'80.....	2,026	3,057,421	101,551
'85.....	3,624	6,335,752	205,951
'86.....	3,100	5,767,655	171,411
'87.....	3,137	5,903,024	182,997
'88.....	3,440	6,640,834	183,895
'89.....	3,425	6,783,187	180,594

"The 3,425 vessels traversing the canal in 1889 comprised:—English, 2,611; German, 194; French, 168; Dutch, 146; Italian, 103; Austro-Hungarian, 54; Norwegian, 48; Spanish, 33; Russian, 23; Turkish, 22; Egyptian, 8; American, 5; Danish and Japanese, 3 each; Chinese, 2; Belgian and Portuguese, 1 each. The Australian traffic for the last three years was:—1887, 222 vessels, of 558,083 tons, carrying 37,806 passengers; 1888, 244 vessels, 660,261 tons, 40,413 passengers; 1889, 239 vessels, 640,411 tons, 40,573 passengers.

"The various resolutions submitted by the board of directors were all affirmed by the annual meeting, the adoption of the report being carried by 1,244 votes to 200 votes."

IV.—*Notes on Economical and Statistical Works.*

Principles of Economics. By Alfred Marshall. Vol. i. London: Macmillan and Co., 1890.

The appearance of this book has for some time been eagerly expected by economic students. These expectations, which have rested at once on the feeling that the time had arrived for a new comprehensive treatise, and on the belief that Professor Marshall, if anyone, possessed the qualifications for the task, will, we think, be found to be amply realised in the volume before us. English students will be able to congratulate themselves on the fact that in the country, which may fairly claim to be the "classic" home of economic science, a book has appeared "written in accordance with English traditions," which seems likely to take the "predominant position" once occupied by Mill's great work, and, in the words which Professor Marshall himself applies to that treatise, to go "far towards forming the thoughts of nearly all" "living economists in England." But Mr. Marshall's own treatise will, we think, also receive, as it will assuredly deserve, almost as much atten-

tion from foreign as from English students. It is true that the circumstances of the United States of America seem to have been more continually present to the mind of the writer than those of any other foreign country; but the extent and accuracy of the acquaintance he displays with the economic literature of Continental nations, and the painstaking anxiety he evinces to accord due weight to the results of the investigations of writers whose attitude of thought is somewhat opposed to his own, will certainly serve to exonerate him from the charge of "insularity," which has not infrequently been brought against English economists. It is this comprehensive knowledge, and this tolerant and impartial judgment, which combine with the acute and penetrating originality of Professor Marshall's work to place his treatise on the same high level as that attained by Mill's *Principles*; for it seems, like that memorable book, to sum up the results of all previous investigations, to place them in their appropriate position, to exhibit their true relations to one another, and in a sense to supersede them. Professor Marshall is anxious to discover and retain all that there is of value in the writings of the older English economists; but the "modern version of old doctrines" which he here presents, takes also into account the "new work," and has reference to the "new problems, of our own age." He pursues what he regards as the traditional English method of collecting, arranging, and analysing facts, and applying the knowledge obtained by "observation and experience" to the determination of the probable "immediate and ultimate effects of various groups of causes;" but he brings under consideration altruistic as well as self-regarding motives, and he includes within the range of his study the ethical side of man so far as it affords the material for economic study. Throughout the book his mathematical training and attainments are conspicuous, and he expresses in the preface his indebtedness to Cournot for that "Principle of Continuity," the prominent application of which, he says, gives his book any "special character of its own" that it may possess. He adopts as his motto the Latin dictum, "*Natura non facit saltum*," and in the spirit of this motto he maintains that "continuous gradations" rather than sharp lines of division are to be found in connection with economic as with other phenomena. For this reason it is that altruistic motives, if only they are regular in their influence, cannot be properly excluded from the causes determining the "normal action" of an "industrial group." For this reason again business men are only parted from ordinary people by "continuous gradations" of deliberate and far-sighted action. For this reason also "normal" values are distinguished from "market" values by differences of time alone, and the element of time itself is "continuous"; and for this reason once more the theories of the values of services and of commodities are characterised by the same "fundamental idea" which runs through the "frames of all the various parts of the central problem of Distribution and Exchange." For this reason, lastly, it is that definitions—those bug-bears of economics—to which Professor Marshall design- edly gives less attention than many other writers have been wont

to do, can be held to correspond, if they are hard and fast, only to artificial and not to natural lines of division. Besides this principle of continuity, which supplies the keynote of the volume, Professor Marshall acknowledges his indebtedness to mathematics for the conception of "marginal increments," and for the notion of "all the various elements of an economic problem" as "mutually determining one another." But he does not permit the explicit use of mathematics in the text, but relegates it to the footnotes and a special appendix. In fact the many departments of economic study, which Jevons in a notable passage declared would probably have in the future to be separately pursued by specialist students, may all be said to be represented in greater or less degree in this comprehensive treatise. The diagrams in the footnotes, and the mathematical appendix, represent the mathematical side. The penetrating analysis of the theoretical argument throughout, and perhaps more especially in book v, which deals with the Theory of the Equilibrium of Demand and Supply, is a brilliant illustration of that deductive reasoning, which by some has been regarded as the distinguishing mark of the English school. But, on the other hand, the history in the first book of the growth of that free industry and enterprise, which Mr. Marshall considers to be in a more fundamental sense than competition the sign manual of modern business, betrays an extensive and appreciative acquaintance with the inquiries and results of economic history. Nor is the bearing of the various matters discussed on practical affairs, and on the improvement of mankind, especially of the poorer classes, ever neglected; while happy and curious illustrations are repeatedly borrowed from the most varied branches of knowledge. The chemical and mechanical conditions of the fertility of land, and the relation of machinery to muscular adaptation and nervous strain, may be quoted as illustrations. Last, but by no means least, is the constant use made of statistics, with the frequent references to the contents of this *Journal*.

It would be impossible, within the necessary limits of space, to give anything like an adequate summary of the contents of such a volume. It represents the matured results of Professor Marshall's previous study; and it is a characteristic of his writing that it is so condensed and pregnant that its full meaning can only be apprehended by dint of continued reflection. The first of the seven books of which volume i consists is devoted to a Preliminary Survey. In an Introduction "economics" is defined as a "study of man's actions in the ordinary business of life." The importance of the science is emphasised, and the comparatively recent date of its real development is attributed to the recent date of the growth of that free industry and enterprise, which is the "fundamental characteristic" of modern business. In the second chapter this growth is traced from early to modern society, from a society regulated in the main by custom, which Mr. Marshall regards as being "generally a disguised form of slow-moving competition," through Greek and Roman civilisation, to the development of the towns and the influence of the mediæval Church and of feudalism, and so on to the great changes occasioned by the invention of

printing, the Reformation, and the discovery of the New World. The benefits of these last discoveries passed in succession to Spain, Holland, France, and England; and in the third chapter the growth of free industry and enterprise in the last mentioned country is accordingly traced. The comparatively early capitalist organisation of English agriculture is shown to have paved the way for that of manufactures, and the origin of large business undertakings is traced to a date anterior to the great inventive discoveries of the eighteenth century and the general introduction of the factory system. In the fourth chapter the parallel growth of economic science is shown, and an appreciative but discriminating judgment is passed on the work of the Mercantilists, and of the Physiocrats; of Adam Smith, whose chief contribution to economic science consisted of his analyses of the way in "which value measures human motive;" of Ricardo and his followers, who were admirable reasoners on money and foreign trade, but "lacked" the "comparative method;" of the Socialists, who insisted on the dependence of man's character on his circumstances, and exercised a powerful influence over John Stuart Mill; and lastly of modern French, German, and American writers. In a fifth chapter the mutual interdependence and reaction of deduction and induction, in a sixth the measurable nature of economic motives, and in a seventh the conditional character of economic laws, are emphasised; and in an eighth and final chapter the conclusions of the book are brought together and summarised. Book ii is devoted to Definitions; and these, the writer holds, must be to some extent elastic. The terms wealth, production, necessities, capital, and income are successively considered. In book iii the subject of Demand or Consumption, to which, Professor Marshall observes, little attention has hitherto been paid generally by economic writers, is examined; and with this book the author commences to bring together by gradual successive stages the constituent parts of the theory of value—the central theory of economics, as it is the main subject of this volume. The law of demand is explained: and the terms marginal or final (Professor Marshall prefers the former) and total utility are distinguished from one another. In book iv Production or Supply is discussed on the same broad lines as those which are to be found in the older economic treatises; but the analysis is pushed much further, and a larger number of facts are taken into account. The causes which influence the fertility of land are set forth, together with the correct meaning which is to be attached to the Law of Diminishing Return, and the conditions which attend its application to fact, according as land is put to various uses, or planted with different crops. The influences determining the supply of labour are then considered under three heads in three successive chapters. There is firstly the doctrine of population. There is secondly the question of physical efficiency, of health and strength; and there is lastly the question of mental efficiency, of education, general and technical, of ability, natural and acquired. Professor Marshall thinks that the four grades of industry distinguished by Mill are tending to fade away into one another, and

that the lines of division between them are ceasing to be sharply defined. In chapter vii he considers the growth of wealth, and in chapters viii to xii the various topics connected with industrial organisation, such as the division of labour, the influence of machinery, the localisation of industry, the development of production on a large scale, and the increasing importance of business-management. In the thirteenth and concluding chapter he shows how a law of increasing return is in many departments of economic activity acting and reacting in contrast with, and opposition to, a law of diminishing return. Books v and vi may be said to be preliminary to the combination of the results separately attained in books iii and iv in the seventh and final book which deals with Value, or Distribution and Exchange. In book v the Theory of the Equilibrium of Demand and Supply is set forth. The use of the term "market," and its limitations as respects space and time, the varying application of the term "normal" with reference to short and long periods, the conditions of stable and unstable equilibrium of supply and demand, the interpretation and bearings of joint and composite demand and supply, the statement and explanation of the doctrine of what is called maximum satisfaction, and the action and results of monopolies, are here considered. In the sixth book the term cost of production is exhaustively analysed, and the consequences of limited sources of supply, of the character of the industrial environment, and of the investment of capital, are investigated. In the seventh and concluding book we reach that to which all the previous books have led up. The theory of value is here presented, and the results separately attained before are combined together to make this presentation possible. The meaning of what is called the Law of Substitution, and the modifications effected in the comparatively inelastic assumptions of earlier writers on distribution and exchange, are noted. The relations of Demand and Supply to Labour, to Capital, to Business Power, and to Land are successively considered; and in chapter xii the conclusions of the previous chapters are summarised, while in chapter xiii the influence of progress on value, with especial reference to England, is examined.

Professor Marshall's treatise is thus a re-presentation of the central theory of economics—the theory of value. The strange declaration of Mill that in this part of the science finality had been reached, has for some while past been shown to be unwarranted; but Professor Marshall is careful in his book to build the new on the foundation of the old. He pushes the analyses of his predecessors farther, and he sets forth the qualifying conditions which they sometimes of deliberate purpose neglected, and sometimes perhaps overlooked through ignorance. He begins by simplifying the problem by regarding it separately from either side, that of demand and that of supply; and then he combines the results of these different lines of inquiry and shows how the influences affecting supply and demand mutually affect and determine one another. He softens the hard dogmatic conclusions, and shades away the rigid distinctions, to which some of the more extravagant followers of the older writers gave such

unmerited, and perhaps unintended, prominence. The relations of rent to interest, of earnings of management to earnings of labour, of rent in manufactures to rent in agriculture, are shown to be closer than they had hitherto been generally thought to be. And the reasoning is rendered more luminous and precise by the introduction of some new terms, or the use of terms already employed by foreign writers. The title of the book is the *Principles of Economics*, and not of Political Economy, the term *marginal* is preferred to Jevons' *final*, demand and supply *schedules* are constructed, a *consumer's surplus* or *rent* is shown to be analogous to the familiar *producer's surplus* or *rent*, and the term *quasi-rent* is employed. We have but one cause of regret in noticing the volume, which Professor Marshall has it in his power to remove. It is only volume i. We hope that the author will pardon us for urging that he will allow nothing but the needs of composition and the requirements of health to prevent him from completing the book at as early a date as he can. It is so important that we venture to think that all other literary engagements, and Professor Marshall must have many such to tempt him, should be wholly subordinated to this great end.

Report of the Social Economy Section of the Universal International Exhibition of 1889 at Paris. Ottawa, 1890.

This report, which has been prepared for the Canadian Government by Mr. Jules Helbroaner, one of the members of the Labour Commission created by that Government in 1886 "to study the relations between capital and labour," contains a tolerably exhaustive account of the main results of the Social Economy Section of the Paris Exhibition. That section did not form part of the original programme of the exhibition, but it was started as an afterthought "to point out to masters and workmen who, so far, had done nothing, the example of those who knew how to act, and had acted with success." With this object the section endeavoured to group together and to reward "all the institutions created, either by the employers of labour in favour of the workmen themselves, or by the State, or by cities, to ameliorate the moral and physical condition of the citizens, to accustom them to habits of economy, to acquaint them with the advantages of co-operation, to stimulate enterprise, and, in procuring for them healthy dwellings, to facilitate their opportunities for becoming proprietors." This was at any rate a comprehensive design; and the committees, which were formed in France and elsewhere to organise the section, proceeded to make a methodical inquiry on the various subjects embraced within its scope, basing their investigations on the answers to a selected list of some two hundred questions. The documents sent in response to these questions were arranged under the sixteen heads of (1) remuneration of labour, (2) profit-sharing and co-operative production, (3) professional syndicates, (4) apprenticeship, (5) mutual aid societies, (6) pension funds, (7) accident and life insurance companies, (8) savings, (9) consumers' co-operative associations, (10) co-operative credit associations, (11) workmen's dwellings, (12) workmen's clubs and recreations, (13) social

hygiene, (14) patronal institutions, (15) large and small industries, and (16) State intervention. Mr. Helbronner, following the order of these headings, appends to his report such of these documents as appear to be of interest from a Canadian point of view. He declares that some of them are "veritable essays" on the topics with which they deal; and he is especially warm in his praise of the reports of the Belgian section, and of the committees of the Rhone, the Gironde, and the Sarthe, and of the volumes edited by the great industrial and financial companies. He has given the largest space amongst his selections to the subjects of profit-sharing, pension funds, and co-operative associations, and he has expressly omitted any document which treats of institutions already established in Canada. In his own report he offers some general remarks on some of the subjects illustrated by the documents. The gradual but steady disappearance of apprenticeship in the strict sense of the term, and the attempt made to fill the gap by means of different varieties of technical education, the general advance in the real remuneration of labour, the progress of arbitration and conciliation, and the formation of the Belgian Boards of Explanation; the growth of a feeling in favour of increasing restrictions on the employment of women and children, the success and extension of profit-sharing, and of various modes and methods of saving and making provision for accident, old age, or death, the development of trades unions, and of co-operative consumers' societies and credit associations, the failure of co-operative production, the condition of workmen's dwellings, and the evils of alcoholism, are successively noticed, and a brief estimate is given of the position of affairs on the Continent with regard to these different matters. Mr. Helbronner observes, however, that Belgium was the only country besides France of which the Social Economy Section could be described as exhibiting any complete representation, and that the scanty information supplied from Great Britain had been supplemented by extracts made by himself from foreign reports. He concludes his observations by expressing his belief that, despite of its novelty, and consequent insufficiency, the Social Economy Exhibition "will be fraught with good results. It has, in his opinion, indisputably shown the benefit of profit-sharing, the need of restricting the labour of women and children, the advantage of technical education, the justice of the principle of employers' liability, the benefits and the possibilities of insurance, the danger of alcoholism and of crowded and insanitary dwellings. And all this it has established on the evidence of undoubted facts stretching over a period of more than fifty years. Mr. Helbronner's report is followed, as we have noticed, by the selected documents; and among them those relating to profit-sharing, apprenticeship, and insurance are especially numerous. The report of Mr. Williams on State Intervention in England is reprinted *verbatim*, and an account is given of the proceedings at the three international congresses, which were held during the Exhibition, on Cheap Dwellings, on Accidents Inherent to Labour, and on Profit-Sharing. A bibliography is added at the end of the volume of the works consulted in the preparation of the report.

The Seven Colonies of Australasia. By T. A. Coghlan. Sydney : Charles Potter, 1890.

In this book Mr. Coghlan, who is the Government statistician of New South Wales, furnishes a statistical account of our Australasian colonies. He supplies particulars respecting their area, population, commerce, and natural resources, their public and private wealth, the social and religious condition, the occupations and the education of their people, the form of government, and the cost of living. These particulars are obtained from the official records of the individual colonies; the work so far coming into competition with the *Statistical Abstract* by the statistician of the colony of Victoria. Mr. Coghlan seems to have executed his work with painstaking diligence, and, although he sometimes betrays a dangerous tendency to rely on such statistics as those of Mr. Mulhall for the other parts of the globe, yet he only uses these figures for purposes of comparison with those which he has himself obtained for Australasia from the latest official publications. He commences his account with a brief description of the origin of each of the seven colonies—of New South Wales, Victoria, Queensland, South Australia, Western Australia, Tasmania, and New Zealand. He then supplies statistics of their population, the density of which, he remarks, is as yet comparatively small, and is only 1·27 persons to the square mile. But, on the other hand, the growth of population has been considerable, especially during the era (1841-61) of the gold discoveries, when the annual rate of increase rose to over 10 per cent. In the matter of both birth and death-rates the colonies occupy a “very favourable” position compared with European countries; in the matter of the marriage-rates they “rank on a par” with the leading nations of the world. The Australasian-born element of the population prevails in the proportion of 60·80 per cent., and is for the most part of British origin. So is the immigrant element; and the European nationalities which come next in importance, especially in Queensland and South Australia, are the German and the Scandinavian. The immigration of Chinese has almost entirely ceased. The rise of large cities has been a marked feature. The expansion of trade has proceeded with more rapidity than the growth of population; and Australasia “now shows a larger ratio of trade compared with population than any other country.” [There is unfortunately no definition of what is meant by “trade.”] The value per inhabitant of the total trade, both external and internal, was in 1888 33*l.* 9*s.* 9*d.*; but at the time of the gold discoveries it rose to 43*l.* 7*s.* 7*d.*, although the subsequent fall is to some extent more apparent than real. “By far the greater part of the external trade” is with the United Kingdom; but of recent years there has been an increase of direct trade with Europe, which no longer passes, as it once did, through London. There is an excess of imports over exports; and this is due to the investment of public and private capital in the colonies. The mineral resources of Australasia are “invaluable” and, “with the exception perhaps of gold, have only reached the first period of their exploitation.” “Food of all kinds is fairly cheap,” and articles which would be

regarded as "luxuries" in other countries are here consumed generally, even by the poor. "The use of tea is universal," New South Wales consuming 131 ozs. per head per year, and Queensland 139 ozs. Sugar averages 100 lbs. per head in Victoria and 94 lbs. in New South Wales. Coffee is not much favoured, and the consumption of it is "scarcely more than one-tenth of that of tea;" but the average quantity of meat consumed per year per head is 276 lbs. This is the "most remarkable feature" of Australasian diet, for the German does not consume more than a fourth of this quantity, and the American consumes less than half. The consumption of alcohol, on the other hand, compares very "favourably with most European countries." Mr. Coghlan then proceeds to give statistics of the defensive forces of the colonies, and of the growth of wealth during the first century of their history, which closed on the 26th January, 1888, the centenary of the foundation of the city of Sydney by Captain Phillip. In view of the immense wealth and the productive character of the public expenditure, the burden of debt, though considerable, is, he agrees with Sir Charles Dilke in thinking, by no means dangerous. The banking statistics, he remarks, show heavier reserves than those maintained in other countries, and in New South Wales the "bank reserve equals the whole of the active circulation both of coin and paper." The practice of life insurance is, he observes, very prevalent. The colonies are still in the "first phase of agricultural settlement," and many of them have "not yet emerged from the pastoral stage;" but the prospects of the vine are promising, and the value of irrigation is meeting with due recognition. The census returns, he remarks, in Australasia, as in the mother country, are by no means satisfactory as regards the occupations of the people; but the new census will be characterised by an improved division into "workers and dependants," and by an arrangement of the workers in the "natural classes of primary producers and distributors," with their "various orders and sub-orders." Education is widely diffused at a low cost, railways are constructed with the help of public funds, telegraphic development is rapid and popular; and the prevalence of thrift, the popularity of newspapers and the decrease of crime go far to confirm the truth of the description of Australasia as a "working man's paradise."

Political Science Quarterly. Vol. v, No. 2, June, 1890. London: Henry Frowde.

The June number of the *Political Science Quarterly* contains six articles. Two of these, one on National Sovereignty, and one on the Legislatures and the Courts, are devoted to political and legal rather than economic topics. A third is semi-economic, and describes the evil consequences of the relation in which the United States comptrollers formerly stood to the Courts. The comptroller was not amenable to the orders of the Courts, or to the directions of his superior, and from his decision there lay no other appeal than to Congress. Mr. Renick shows that this unique position led to certain evils. It encouraged official harshness and arrogance, it fostered the misappropriation of public money, it concealed from the

people the true state of the Treasury books, it assisted the pernicious influence of the lobby. Professor Richmond Smith contributes an article on Census Methods, in view of the approaching eleventh American census, which, he declares, will be the "greatest piece of statistical work undertaken in modern times." He dwells upon the importance of a census, whether it be regarded merely as a process of national "stock-taking," or as furnishing the means for "sociological observation." He complains of a lack of "scientific interest" in statistical work and "scientific criticism" of its results in America as contrasted with England, where the "Royal Statistical Society" "takes an active interest in all such work," and other European countries, where "men of the highest scientific attainments" are placed at the head of the various statistical bureaus. But in America the census is, he declares, criticised on "results," and not, as it should be, on "methods." The question of the proper scope of a census is ignored, and quick results are demanded at the expense of careful analysis of the "raw material." Mr. Smith then examines the schedules of the new census. "From a scientific point of view, a census," he remarks, "falls naturally into two parts," the first referring to facts of general "sociological" interest and dealing with statistics of population, and the second referring to facts of "economic" interest, such as statistics of agriculture, manufactures, and transportation. He complains that the questions asked under the first head in the American schedules are too numerous; but he also recognises that new information of interest and importance is promised, and he urges the paramount necessity of careful analysis. With regard to the second head, he points out that the work of the experts and the special agents was overdone in the last census, and that more attention should be given to the "purely statistical," and less to the historical part of the work, for the results of the census have an important bearing on practical legislation as well as on theoretical speculation. "The census officials," he concludes, "have an unexampled opportunity," and "all that we demand is technical skill and honest endeavour." Professor Seligman, in an article on the "Taxation of Corporations," pursues those investigations which he had begun with that essay on the "General Property Tax," a reprint of which we noticed in the last number of the *Journal*. He shows that the difficulty of reaching personalty is increased by the fact that it now consists so largely of such "intangible" property as "evidences of ownership in associations," and "corporate securities." He declares that the practice of the United States on the matter is nothing else than chaotic; and he attempts to set forth in order the facts of the question. In the early taxation of this century it was assumed that the property of "artificial persons," like corporations, was, equally with that of natural persons, liable to the general property tax. This assumption led to practical defects, and some States abandoned the attempt to tax corporations altogether, while in the case of others a threefold tendency was manifested. The property of transportation companies was assessed separately by a special board according to definite rules. Certain classes of corporations were taxed, not on their

property, but on certain elements supposed to represent roughly their taxable capacity. And, thirdly and lastly, all corporations were taxed by an uniform rate. He gives an exhaustive summary of these different methods, and this discloses as many as thirteen different varieties, with the respective bases of the value of the property, its cost, the capital stock taken at par or at the market value, the capital stock *plus* the bonded debt at market value, the capital stock *plus* the total debt, funded and floating, the bonded debt, the business transacted, the gross earnings, the dividends, the capital stock according to the dividends, the net earnings, and the franchise. In the succeeding article Mr. White replies *seriatim* to Professor Patten's criticisms in the March number on Mr. Wells' *Recent Economic Changes*; and the usual reviews of books follow, together with a record of political events by Dr. Dunning.

Child Labour.

I. By William F. Willoughby.

II. By Miss Clare de Graffenreid. American Economic Association, 1890.

The two papers contained in this monograph were written in competition for a prize, and were considered by the adjudicators to be of such equal merit that the prize was divided between the writers. The question with which they deal is apparently one of increasing importance in America, where the employment of children is growing, and the legislative restrictions on that employment are as yet inadequate. Mr. Willoughby divides his essay into five sections. After a brief introduction, he reviews the evils of the early days of the factory system in England, and the successive stages by which the State intervened and restricted the employment of children, until the factory laws were finally consolidated in 1878. England is, he declares, most advanced in industrial development, and England has also an abundant mass of evidence on the evils of child labour. He then reviews the position of the question in the United States, where the regulation of factories varies as we pass from State to State, and the evidence to be gathered from the reports of inspectors and of the Bureaus of Labour is incomplete. The census statistics bear, however, indisputable testimony to a tendency to an increasing employment of children in factories and in domestic industries; and the legislation regulating this employment is for the most part of comparatively recent date. "In no single case have" the States "approached the complete and well-working law of England." "The greater number" have no specific laws regulating the employment of children, save some provision for compulsory education, which is as often as not a "dead letter," and many of the laws which do exist are in practice inoperative. In a third section Mr. Willoughby considers the economic aspect of child labour, and shows how it tends to lower the standard of comfort. The children themselves grow up with deadened aspirations, and their employment tends to reduce the rate of wages, for the workman has no longer to support a whole family by his individual earnings. In the fifth and conclud-

ing section he discusses the social aspect of the question, the injustice done to the children themselves, their intellectual ignorance, their physical weakness, the destruction of the family and home and its elevating associations; and he concludes by urging that the time is ripe for a comprehensive and effective reform which would abolish child labour. Miss Graffenreid treats the question in her essay in a somewhat different manner. She lays perhaps greater stress on the evils of the present system, and is more impassioned in her language. But the subject is certainly, as she remarks, one which it is "difficult to treat dispassionately;" and she recognises that the "outlook is not discouraging," and that the "wretchedness and abuses which undeniably exist pertain to but a segment of the industrial world." She dwells, like Mr. Willoughby, on the defective education of the children, especially among the foreign population; and she sets forth the unhealthy conditions, and sometimes immoral influences, of the factory. She describes with detail the various employments in which children are engaged; and the different methods by which legislation, where it exists, is often evaded.

Annals of the American Academy of Political and Social Science. Vol. i, No. 1, July, 1890. Philadelphia: A. L. Hummel.

The activity shown on the other side of the Atlantic in the study of political, social, and economic subjects is remarkable. Not only are there, as is stated in the introductory note to the report of the proceedings of the American Academy, two periodicals devoted to these subjects in the shape of the *Political Science Quarterly* and the *Quarterly Journal of Economics*, but there are also series of publications issued by the Johns Hopkins University, and the University of Pennsylvania. There are a number of text books and monographs written by various authors, and there are the volumes of the American Social Science Association, the American Economic Association, and the revived American Statistical Association. And now we have before us the first number of a new journal, which it is proposed to issue quarterly. A preliminary meeting of the Academy was held in the December of last year at Philadelphia, which is to be the headquarters of this new society, and it already numbers a membership of over seven hundred. It proposes to hold meetings for the presentation of papers, and to issue a quarterly journal. This is to be under the editorship of Professor Edmund J. James, who is assisted by Professor F. H. Giddings and Dr. R. P. Falkner. The zeal thus manifested in America may not be in every case—in fact it is impossible that it should be—entirely according to knowledge; but this first number of the *Annals* gives promise of reaching the same high level as that generally maintained by its predecessors in the same field; and from very shame we may congratulate ourselves that in our own country there now seems at last to be some definite prospect that we shall follow the example of America, of France, of Italy, and other countries, in having an economic, as well as a statistical journal. The volume before us consists of six articles on the subjects respectively of Canada and the United States, by

Dr. Bourinot; of the Decay of Local Government in America, by Professor Patten; of the Law of Wages and Interest, by Professor J. B. Clark; of the Province of Sociology, by Professor F. H. Giddings; of Instruction in Public Law and Economics in Germany, by Mr. Rowe; and of Railroad Passenger Fares in Hungary, by Miss Wetherell. Professor Clark's article is an acute and discriminating analysis of the causes which determine the rates of wages and interest. He does justice to the truth underlying the wages fund doctrine, he elaborates the principle that the law of distribution is in its essence a law of proportionate production, he distinguishes economic functionaries, made up so to say of "fractional men," from actual individual personalities, and he ingeniously applies the fruitful conception of final utility to the determination of the problem. Professor Giddings endeavours to define the province of sociology, to note the relations which it bears to other sciences, such as biology and psychology, and to describe its proper function as an "explanation of social phenomena in terms of natural causation." It is "not the inclusive but the fundamental social science," "not the sum," "but the groundwork" of them. Mr. Rowe gives an account of the provision made in Germany, which has, he thinks, "in the wealth of its recent economic literature," no rival in any European country, for instruction in law and economics. An abstract of a paper read by Professor Edmund James follows, with a translation by Miss Wetherell of a new system of railroad passenger fares in Hungary. All these articles belonged to a number of papers read at the first and second sessions of the American Academy, and an account of the proceedings is next given. This is followed by personal notes relating to appointments, and other incidents concerning economic and social writers and teachers in various countries, and by notices of recent books. The journal concludes with a miscellany, in which an account is supplied of the International Criminal Law Association founded in 1889 by Professor Liszt of Halle.

Indagini sulla Emigrazione Italiana all' Estero, 1888-89. Roma: Presso la Società Geografica Italiana, 1890.

The extensive emigration from Italy, which has taken place of recent years, has been one of the most conspicuous of modern economic phenomena. The Argentine Republic has absorbed a large proportion of the emigrants, and has perhaps secured the most valuable classes among them. But the Italian immigrants to the United States constitute an important element among the foreigners who form so large a component part of the American people, and the presence of Italians in France has excited somewhat the same feelings as those aroused by the landing of Chinese in California or our own Australasian colonies, or in a more mild degree by the arrival of Jews in London. And if the immigration of Italians is an important consideration for the countries to which they go, it is also an important consideration for Italy itself. It suggests, what is unfortunately true, that the economic conditions of Italy are marked by widespread distress, and intense poverty;

and that a writer who declared that the "whole population seems a proletariat," was guilty of nothing more than a pardonable extravagance of speech. The Italian Geographical Society has therefore rendered a real service to the consideration of a most urgent problem in the volume before us. It has conducted a careful investigation into the circumstances of this Italian emigration. The subject has, as we are informed in the preface, occupied the attention of the Society for some years. The absence of any sufficient provision for the guidance and safe conduct of the intending emigrants, who are generally ignorant and poor, and are often deceived by speculators and agents, has pointed to the desirability of protective machinery, and to the preliminary necessity of acquaintance with the facts of the question. The direction and character of the emigration, and the institutions and measures existing for the protection of immigrants in foreign countries, have been investigated under the direction of Signor Rossi. A series of questions has been addressed to chambers of commerce, to workmen's societies, and to well known individuals in different countries, on various points, such as the existence of any institution or society which would assist with information or otherwise the immigrants on their arrival, the number and occupation of the Italians already settled there, the pursuits in which they would encounter the competition of natives, the amount and the tendency, upwards or downwards, of wages, the cost of living, the opening for the labour of other members of the family, the habits of inter-marriage, the possibility of acquiring the ownership of land and the rights of nationalisation. Answers were received to these questions from various cities in the United States and Canada, in the Argentine Republic, in Brazil, Uruguay and Paraguay, Chili, Peru, and Mexico, in Egypt, Tunis, Algeria, Morocco, and even Basutoland, in Australia, New Zealand, Singapore, and India, in Turkey, Russia, France, and England. The questions and answers are preceded by a review of the principal results of the inquiry. The great mass of the emigrants, for example, to America, which is the most favoured destination, appear to turn their attention either to agriculture, or to simple manual labour in house or railway construction, or to mercantile business; and wages are higher there than in Italy, while the cost of living is not very different. The review is followed by a scheme prepared by the Society for a proposed emigrants' information office.

The Conflicts of Capital and Labour. By George Howell, M.P. Second edition. London: Macmillan and Co., 1890.

Mr. Howell's account of the past history and the present constitution and aims of trades unions, is well known to economic students and to the general public. It is an authoritative account written by a trades unionist leader; and, although some of the chapters, such as that on Political Economy and Trades Unions, may not be free from bias, even in their present form, yet the value of the book is very considerable. In the edition before us the author has carefully revised his information, and brought his facts down to date. He states in his preface that the changes which have

passed over popular opinion regarding trades unions in the interval which has elapsed between the issue of the first edition in 1878, and of the second in 1890, have been "so great that the work has had to be practically rewritten." But he does not himself regard with favour the recent development of a new trades unionism which condemns the "friendly benefits" and looks to the State for aid. The general arrangement of the book, and the headings of the different chapters are, with minor exceptions, unaltered from the original edition. The historical part is, as before, based in the main on Dr. Brentano's Essay on Guilds; but the descriptive part is illustrated by facts and figures brought down to date, and in several places a paragraph is inserted, or a footnote added, to supplement or modify the language of the original text. The general result of these additions is of an encouraging nature, for in most cases they afford evidence of improvement in the conditions and the attitude of labour.

V.—Additions to the Library.

Additions to the Library during the Quarter ended 30th September, 1890, arranged alphabetically under the following heads:—(a) Foreign Countries; (b) India, Colonial and other Possessions; (c) United Kingdom and its several Divisions; (d) Authors, &c.; (e) Societies, &c. (British); (f) Periodicals, &c. (British).

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<i>Oesterreichische Statistik—</i>	
Band xxiv. <i>Statistik der Rechtspflege.</i> Heft. 1. Die Ergebnisse der Civilrechtspflege, 1886 Band xxv. Heft 1. <i>Bewegung der Bevölkerung im Jahre 1888</i>	The Central Statistical Commission
Statistische Monatschrift. May—July, 1890 HUNGARY. <i>Magyarország Aruforgalma Ausztriával es más Országokkal.</i> (Monthly Trade Returns.) Feb.—April, 1890	The Royal Hungarian Statistical Bureau
BOHEMIA. <i>Mittheilungen des Comité für die Land- und Forstwirtschaftliche Statistik des Königreiches Böhmen für 1885-88.</i> 8vo.	The Statistical Bureau
BUDAPEST. <i>Statistik des Unterrichtswesens der Hauptstadt, für 1881-82—1888-89.</i> 2 parts, 8vo	The Statistical Bureau of Budapest
<i>Prague—</i>	
Bulletin hebdomadaire de la Ville de Prague et des Communes-faubourgs. (Current numbers) Statistisches Handbuch der Königlichen Hauptstadt Prag für 1887 und 1888, Neue Folge, sechster Jahrgang. 8vo.	The Statistical Bureau of Prague

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Annuaire Démographique et Tableaux Statistiques des Causes de Décès. XXVIII ^e année, 1889. Plan and diagram. 8vo. }	Dr. E. Janssens
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Customs Gazette. No. 85. Jan.—March, 1890 } Returns of Trade and Trade Reports for 1889. Part 2. Reports and Statistics for each Port and for Corea. }	Sir Robert Hart, G.C.M.G.
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Journal of the China Branch of the Royal Asiatic Society. New Series. Vol. xxiv, No. 1, 1889-90. (Selection from Contents.) Currency and Measures in China	The Society
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Nationalökonomisk Tidsskrift. Ny Række. Hefte 3. 1890	The Danish Political Economy Society
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Le Commerce Extérieur de l'Égypte pendant 1889. 8vo. }	
Bulletin de l'Institut Egyptien. 2 ^e Série, No. 10. Année 1889. (Selection from Contents.) Progres- sion de la Dette Egyptienne: <i>J. Rabino</i> . Il y a cinquante ans. Extraits et compilation d'un "Blue Book" anglais de l'année 1839: <i>J. Rabino</i> . Plates and diagrams, 8vo. }	The Institute
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JOURNAL

OF THE ROYAL STATISTICAL SOCIETY,

DECEMBER, 1890.

The INAUGURAL ADDRESS of F. J. MOUAT, M.D., F.R.C.S., LL.D.,
PRESIDENT of the ROYAL STATISTICAL SOCIETY. *Session* 1890-91.
DELIVERED 18th November, 1890.

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I.—Introduction.

HAD I consulted my personal feelings and competency only, when I received at Carlsbad the intelligence of my selection for the honourable office of presiding over your actions and deliberations, I should unhesitatingly have declined the honour and the office of President of this important and eminently useful Society.

But, when it was intimated to me that my humble services could be of use to an Institution with which I have been connected for nearly half a century, and of which I have, in years gone by, occupied most of the executive offices, I felt compelled to accept your nomination cheerfully.

Whilst I shall be happy to assist to the best of my ability in promoting the interests of the Society, I still retain strong misgivings as to my qualification for the duties which your presiding officer has to perform.

The first and not the least difficult of those duties is the delivery of an opening address, as I find in considering those of most of my distinguished predecessors; for in this, as in most

other functions of similar character, there are various ways of dealing with a task that needs special knowledge and experience, so as to speak with the authority naturally attached to the temporary occupancy of this chair.

I cannot lay claim to such special knowledge and experience of any portion of the wide field of Statistical Science, as to entitle me to assume the *rôle* of a guide in the consideration of such questions as may come before you in the present session. I have, therefore, selected the more humble, but probably not less useful part of passing in such review as the limits of an opening address afford, some of the current leading questions of public interest and importance which are within the strict limits of the work expected from this Association.

II.—*Obituary Note.*

In taking stock of our losses and gains during the past year, which I shall refer to more specifically in my concluding remarks, the first matter usually touched upon is that of the deaths of our members, which, I regret to say, have been unusually heavy during the session, and beyond the average of the previous decade.

A reference has already been made in our proceedings to most of those whose connection with the Society and its work required special mention. The detailed record of those of them who had attained distinction in other walks of life has been made elsewhere, hence the omission of their names on the present occasion.

To the loss, however, must now unfortunately be added that of the most eminent of them all, the late Sir Edwin Chadwick, who died in July last full of years and honour, after an exceptionally lengthened career of usefulness and distinction. He was one of the three survivors of the original members of the Society—the two others being the Earl of Lovelace and Mr. James Heywood—having been elected in 1834. Sir Edwin Chadwick served for some years on our Council, was a very generous donor to our library, and several valuable contributions from his pen are contained in our Transactions, two only of which were, however, first presented to the Society.

In the great work to which his life was chiefly devoted—that of the improvement of public health, and its resultant priceless benefits to mankind—his watchwords were “unity and prevention,” and he preached and practised the doctrines contained in them with an untiring energy, indomitable perseverance, sterling regard for truth, unswerving faith in statistics when honestly collected, as sure and certain guides, united with a singular clearness of exposition, which carried conviction to the minds of those best fitted to appraise them at their real value. To have merited the

universal recognition of those services which his death elicited, and to have been rightly regarded as entitled to a place in the front rank of public benefactors, as well as to be considered the Father of Sanitary Science in his time and country, are distinctions accorded to very few in any age. They fairly belong to him. Full particulars of his busy and useful career are contained in the well known record of his works by his friend and literary biographer Dr. Richardson, himself one of our most esteemed authorities on the subjects considered in them.

III.—*International Penitentiary Congress of St. Petersburg.*

In June last, the Fourth International Penitentiary Congress was held at St. Petersburg. Delegates were nominated to represent this Society, and the Howard Medal was presented by it to the Congress to mark the approval by the Society of the celebration of the centenary of the death of the great philanthropist, and of the honour and respect paid to his memory by the country in which he died and was buried.

Your delegates were unable to attend in person, but the medal was duly transmitted, presented, and courteously acknowledged by the President of the Congress.

The Report on International Prison Statistics, the chief point of interest to us, was presented by M. Yvernes, and the following resolution on the subject was adopted by the Congress, viz.:—

“That an international penitentiary statistic be prepared for each session of the Congress.

“That this task be confined to the prison administration of the country in which the Congress may meet.

“That the investigation refers to the second year following the preceding Congress.

“That the tables annexed to M. Beltani Scalini's report be considered the basis of this international statistic.

“That the publication be accompanied by an analytical report making known the state of prison statistics in different countries.”

This is substantially the conclusion arrived at in the discussion of International Prison Statistics by this Society, in 1876.

I reserve all remarks upon this resolution and the action of the Congress generally, until the detailed official report has been published.

IV.—*Congress of Hygiène and Demography.*

You are aware that a Congress of Hygiène and Demography is to be held in this city in 1891, and you have nominated delegates to represent the Society, and to aid in the organisation of the latter branch of the Association.

As this will be the first public occasion in this country in which the term "Demography" has been applied to the collection of facts and figures relating to man in association, a few remarks on the origin of the Association and its exact significance will not be out of place on this occasion. The more especially is it appropriate, as I was your delegate in 1877, and assisted in the creation of the Society.

Of this I submitted a brief report, which is published in our *Journal*,¹ but as very little appears to be known about it, I will explain it as briefly as possible.

The term "demography" is not to be found in any of our dictionaries, even of tolerably recent date, and in France is only contained in the great work of Litttr , who denominates it "a didactic expression descriptive of peoples as regards the population in relation to ages, professions, dwellings, &c.;" and he also adopts the definition of Quetelet, that it is "the natural history of society." The appellation appears to have been first employed by M. Galliard in his "Elements of Human Statistics or Demography," published in 1855.

The first President of the Society, the late Dr. Bertillon, treated it as dealing with the inner life of the social bodies which form a people (births, marriages, deaths, migrations, &c.), but only in their collective influence, of which it measures the powers of the parts or of the whole, without meddling with biological proceedings, which distinguish it from physiology.

The discussions of the first meetings covered a very wide field, including the determination of an exact system of taking a census, and a view of the plans in use in most countries, declaring that of England to be the most widely adopted, that of Germany the most exact but most costly, and that of France as defective in principle and unreliable in execution.

As it was doubtful whether in the beginning it could sustain a separate existence, it was resolved by mutual agreement, in 1878, to add a demographic section to the Congress of Hygi ne. The first meeting of the united body, at which I also assisted, was held at Geneva, in 1882, when it was resolved to continue the Union, to which Demography however should be a co-ordinate branch, and not a mere section. This arrangement has continued to the present time.

The late Dr. Bertillon regarded England as the real home of demography, as it surpassed all other nations in the incomparable richness of its demographic inquiries, and in the unbroken continuity of its published returns.

For this reason, and for the undoubted value and interest of the

¹ Vol. xlii, 1879, pp. 23—25.

work which it is intended to accomplish, I consider the approaching Congress to be well deserving of all the support which this influential Society can afford it.

V.—*Labour and Wages Disputes.*

The strikes which have occurred in the past year, and of which the end has not yet come, have been so numerous and on so extensive a scale, and so many new elements and motives of action have been introduced into them, which have no necessary connection with their strictly economic relations, that I deem it expedient to say a few words regarding them, with special reference to the work of this Society.

In 1838, a committee of the Society was appointed to collect a statistical account of the various strikes and combinations which had occurred in different parts of the United Kingdom, to alter the rate of wages and introduce new regulations between masters and men. The conditions of the inquiry were laid down, and the inquiry was doubtless instituted, but I have been unable to find in our recorded transactions any formal reports of the results of its action. The papers however of Mr. Boyle, on "Strikes in the Potteries," of the late Professor Waly, of Mr. Bevan, on "The Strikes of Ten Years, 1870-79," and a few remarks from the valuable work of M. Von Neumann-Spallart, on the "World's Progress in Trade and Industry," together with the recent valuable paper of Mr. Price, on "Industrial Conciliation," exhibit the interest taken by the Society in the subject. Our transactions abound in scattered fragments of information on labour and wages, but there is no connected or detailed view of the extent of the disturbing influence exercised by strikes, in particular industries.

Those which have recently occurred indicate a new departure, which is producing serious effects upon the social condition of the people, and upon the trade and commerce of the country. They appear to me to be, in consequence, deserving of the most careful, unbiassed inquiry from the statistical standpoint, lest they should result in disasters of which it is impossible at present to forecast the issue.

The interests of classes, too often regarded as antagonistic, are in reality, as all treatises of authority on Economics teach us, identical. It is only ignorance or designed perversion which prevents their uniting for each other's advantage. To dispel this ignorance in all economic questions which cannot be properly regulated without the strictest interdependence, and to educate public opinion regarding them, is one of the proper functions of statistical science in our time.

It was feared half a century since, when the great educational

movement commenced which is rapidly approaching compulsory and free instruction, that its immediate effect would be attended with the danger of the control of public opinion, which is daily acquiring greater power and influence in this country, falling into the hands of persons imperfectly instructed or of professional agitators, and being directed into wrong channels by the propagation of crude judgments, irrational prejudices, and economic heresies and fallacies.

The old apothegm, "that a little knowledge is a dangerous thing," no longer commands universal assent, and is replaced by the belief, "that a man is more likely to find his way in the faintest twilight, than in absolute darkness." No more appropriate and unimpassioned field for the authoritative scientific consideration of these labour disputes as an instrument of education and a corrector of error where it exists, can be found than in this Society. Hence, I hope, that some of the eminent economists in our ranks who are accepted guides, will take up the question of this new departure, popularise it, and bring conviction to the minds of the many who are at present misled and misguided, from being without safe or trustworthy guidance.

VI.—*The Census of 1891.*

As respects the approaching census, it is much to be regretted that some of the useful and practical suggestions of this Society—which has long occupied a distinguished position in relation to the question of the periodical numbering of the people,—and of the report of the special Committee appointed to inquire into certain questions connected with the taking of the census, were not adopted by the Legislature. To whatever causes this may be due, whether to parliamentary indifference, to party exigencies, or to the expensive parsimony of the Treasury, it is manifest that we must rely upon ourselves to supply the missing links as far as may be practicable, without the direct interposition of the State. It is evident that there is no likelihood to be any outcome from the labours of the Statistical Committee of the Treasury appointed in 1877, the proceedings of which are admirably reported in our *Journal*.² The system, which was then pronounced on unimpeachable testimony, to be no system at all, still exists, and seems likely to continue to sustain its character.

Is there no way out of this "*impasse*?" I venture to think there is, and that it can be accomplished by any of the great Municipalities which have the courage and wisdom, and possess the power and the pelf, to collect the materials of, and publish a statistical account of their cities, on the lines of those of Paris or

² 1881, vol. xlv, pp. 269—367.

Berlin, and preferentially of the latter, as the most complete of the two. The economic value of such information for London, Liverpool, Manchester, Birmingham, Glasgow, and all the great centres of industry, would be difficult to overestimate, and would soon lead to legislative action to harmonise all such labours by centralisation and uniformity of procedure. There are many unsolved problems in demography, for the solution of which the materials would then and thus soon be collected and utilised.

Should they not possess the authority at present to obtain information from any branch which now furnishes reports direct to different departments of the State, and so far are not responsible to them to supply it, there ought to be no special difficulty in getting it from the legislature, for it would be a form of Home Rule upon which no party issue could fairly be raised, and the cost would very soon be repaid by the value of the results.

There is one other matter connected with the census which I should have been glad to have been able to refer to, but I am afraid that my budget is becoming too heavily charged—I mean the Imperial Census of India. This will be taken in February next, a proceeding which will have to deal with an estimated population of 280 millions, to employ a million of enumerators, and to issue some 70 millions of schedules in seventeen different characters printed at the Alipùr Jail Press. It will have to take into account exceptional difficulties and prejudices, moral and material, is the greatest task of the kind ever yet undertaken or performed by any nation, and well deserves to be widely known. I have, therefore, prepared a special memorandum on the subject, and hope that the distinguished Editor of our *Journal* will be able to find a place for it in his *Miscellanea*, which he has rendered an unrivalled storehouse of information on all branches of statistical research and inquiry.

VII.—*Food Supply of the United Kingdom.*

Among the matters then deemed of most importance for statistical inquiry, the late Mr. Newmarch in his inaugural address in 1869, placed in the front rank, "The annual consumption per head among different classes, and by the nation as a whole, of the chief articles of food," which he specified. The need is, if possible, of equal or greater urgency now, than it was then.

The excellent paper of Mr. S. Bourne in 1882,³ on "Food Pro-ducts and their International Distribution," did not deal with the view of the question taken by Mr. Newmarch. Moreover, the whole subject of our food supplies in relation to imports, exports, and sources of production, as well as distribution, has, from economic

³ *Journal of the Statistical Society*, vol. xlv, pp. 423—60.

and other causes, changed so much in the last few years, that the time appears to me to have arrived for its reconsideration from the statistical standpoint.

An additional reason of considerable cogency has arisen from the place which the question has occupied in the recent discussion on the defence of the country in case of war. The military and naval authorities seem to entertain widely divergent views on the subject. One of our most distinguished soldiers, Lord Wolseley, is reported to have publicly proclaimed the "starvation theory" to be "one vast and complete humbug," as we have a reserve supply of provisions sufficient to feed us for three or eight months, without any external aid. This bold assumption demands careful inquiry, for upon it hinges to a great degree our safety or danger in relying principally upon our first or second line of defence in the event of invasion.

In the Franco-German war, Paris was starved into submission with less than half the population of London, and yet I remember being present when the then new king, Louis Phillippe, laid the foundation stone of the first of the chain of forts surrounding Paris, and M. Thiers, the Prime Minister, in his speech proclaimed that "Paris was for ever protected against foreign invaders!"

This should, I think, be a lesson to us to ascertain how the matter really stands, before the necessity for making the provision arises.

VIII.—*The Anthropometric Identification of Criminals.*

Among the noteworthy occurrences of the past year having important bearings on statistical methods, is that of the anthropometric identification of criminals as practised now throughout France, as being adopted in principle and being put in practice in Germany, and as having already obtained a firm footing in the United States.

As I persuaded Dr. Bertillon to give us in London some information and practical demonstration of the method introduced by his brother in Paris, and as I had, in years gone by, when in administrative charge of the prisons of Bengal, studied carefully the difficult problem of the best means of identifying criminals on reconviction, I followed his demonstration with great interest, and am satisfied that the anthropometric method is not only the best means yet discovered of securing this desirable end, but that it is also correct in principle, strictly scientific in character, and when properly performed, efficient in practice.

It appears that this view of the matter is not taken by some persons of authority in England, on grounds which do not appear

to me to be conclusive. I deem it right, therefore, to say a few words on the subject, as I think that erroneous impressions on such subjects should not pass unchallenged.

Every student of medical jurisprudence, and most authorities who have been engaged in the solution of questions of personal identity, are aware of the extreme difficulty of obtaining absolute proof, sufficient to carry conviction of such identification.

General Du Cane, in the discussion on a paper of mine, on *International Prison Statistics*, read before this Society in June, 1876, pointed out the overwhelming confusion of the plans of registration then in use, and advocated the restriction of such records to the narrowest limits, by the elimination of all that was useless or misleading, and the retention only of what could be, and was, in his estimation, absolutely accurate. This latter condition I take to be unattainable, and assuredly the prison statistics of Great Britain are deficient in many particulars necessary to understand rightly their real significance, the figures of which could be collected with little trouble, and without any misleading intended or implied. But, for personal identification the Bertillon plan fulfils General Du Cane's condition, inasmuch as it leaves nothing to conjecture or defects of memory and observation, and is so far better than any other yet tried.

In an article on the subject in one of our leading periodicals, is contained the following statement:—

“There is no reason to suppose that the programme of police reform will embrace the adoption of the French system of the anthropometric measurement of prisoners. There is said to be a prejudice against M. Bertillon's plan of taking note of the height, the size of the head, the facial angle, the size of the hands and feet, and the stretch of the arms. I believe I am correct in saying that the late Commissioner (of Police) regards the measure as a ‘scientific fad’ of no practical use, except in gaols for the correction of registers, copies of which are forwarded to the police. But, even if approved, anthropometric measurement could not be introduced without fresh legislation, for under the English law at present such procedure would render the examining officer liable to an action of assault. As a scientific theory the system is very well, but after all bodily marks are secondary means of identification, which must rest mainly in the features.”

In the Bertillon process there is nothing approaching to stripping, and the identification by features alone is found to be so fallacious and fleeting a test, as to constitute the least important factor of the record. A plan which, after years of careful investigation and experiment, is susceptible of such accuracy as to

establish the identification of a person charged with crime from more than 100,000 examples in less than five minutes' examination of the record, cannot rightly be regarded as a mere theory of no practical value. A million of such records could be manipulated with equal facility.

It is to be hoped that wiser counsels will prevail with those charged with the detection of crime and its punishment on reconviction, and that a plan which has been thoroughly successful elsewhere, after years of use, will not be condemned on grounds which are in no way applicable to it.

IX.—*The Hospital Question.*

It was originally my intention to have devoted my introductory address exclusively to the whole hospital question, which I regard as one of the most important economic and social matters that press for early solution and legislative action, of which there appears to be some likelihood now. But I found that the field would be too vast to be susceptible of consideration within reasonable limits, and that other cogent reasons forbade it. The need however of a radical change of procedure and practice in the provision of immediate and effective *hospital* aid, without pauperisation of the afflicted in serious and disabling sickness, to those members of the working classes who are unable to pay for it in their own homes, has long been manifest to many of the earnest and devoted members of our community who work among the poor, and endeavour to lighten their lot at all times, and more especially when the shadows of sickness and suffering darken their humble homes.

I think it may not unreasonably be assumed from all that has been said and written on the subject for many years past, that the present hospital system of London is gradually breaking down from sheer physical inability to deal with the unprecedented growth and consequent changed conditions of life in the metropolis.

The funds of the endowed hospitals are, on their own showing, no longer adequate for their wants. The voluntary hospitals, from their incessant appeals for aid, seem to be consuming their capital without replacing it by any reliable or permanent sources of increase to their means of maintenance. The distribution of the institutions other than those connected with the poor laws for the indoor treatment of the sick poor, has not followed or kept pace with the movements of the population. The expropriation and compulsory changes of domicile of the labouring classes who live from hand to mouth, have not been preceded, as they ought always to be, by the provision of proper and effective means of making the removal as little irksome or harmful as possible. Very many if not most of

the deserving classes of the non-pauper sick poor do not, as a rule, obtain the relief they need in serious acute attacks of disease, as quickly and certainly as the successful treatment of such diseases demands. Much of their time, with a serious aggravation of their maladies, is too frequently wasted, too often unsuccessfully, in the attempt to obtain admission to general hospitals, far or near. Their pauperisation solely by the occurrence of disease, for which they cannot rightly be held responsible, is neither just nor equitable. In all these circumstances it is to the interest of the community in general, and the advantage of the temporarily destitute sick poor in particular, that the State should afford its aid in alleviating and removing as far as possible these unavoidable evils, without any direct violation of the sound and established principles which should always regulate the action of the ruling power, in dealing with social defects among a free and self reliant people.

The construction and management of hospitals in their relation primarily to the interests of the sick, and in strict subordination to that, as instruments of instruction and scientific research, first engaged my attention in 1841. In that year the executive and administrative charge of the Medical College of Calcutta, with the addition of an important professorship in the school, were entrusted to me by the Government of India.

That institution, the first and still the greatest of its kind in British India, was then in its infancy, and it at once became my duty to organise it in all its departments, the first Principal having died before he was able to undertake this laborious task. Chief amongst its deficiencies was the absence of an hospital of adequate dimensions for the clinical purposes of a great school of medicine, and for the needs of the dense population in whose midst it was placed, and I dwelt for several years.

In my task I was cordially aided by my colleagues, who constituted the College Council, and a source of unfeigned sorrow is it to me to find that I am the sole survivor of that band of earnest and devoted members of our profession, which has done more than any other class to render British rule acceptable to the vast populations under the control of this country.

It occupied seven years of constant exertion to secure the end desired. The foundation stone of the building was laid by the greatest pro-Consul India ever had, in 1848. The history of the institution is contained in the official report on the table.

In 1881, I wrote a series of papers on Hospitals in the "*Lancet*," in the hope that the leading questions regarding them might be discussed by the Medical International Congress held in London in that year. In this I was disappointed.

In 1883, Mr. H. Saxon Snell and I united in producing a joint

work on the subject, and to it I added, with his concurrence, a special section on the organisation of medical relief in the metropolis—to which branch of the question my remarks on the present occasion must be restricted.

A second edition of our work is on the table.

The purely professional relations and arrangements of these very valuable institutions I shall not now discuss or consider, as I am of opinion that in their technical aspects they are better left in professional hands and to professional tribunals to deal with. In their economic and social aspects they are not only well suited to be placed before you, but are more likely to be judged on their merits without any class or professional bias, and solely in the interests of the public who are so deeply concerned in their right regulation.

My first step in my inquiry in 1881 was to ascertain the adequacy of the existing hospital accommodation of the metropolis for the needs of the comparatively overwhelming numbers of the poor, immediately above the permanent pauper class. Here I was met and baffled by the entire absence of reliable statistics of even their approximate numbers, distribution, and means of paying any sum however small, towards their relief in hospitals for sickness of a non-contagious character. In the census of that year the industrial classes were represented to be a million and a quarter strong, and those in domestic service 360,000, but the non-existence of any of the sub-divisions necessary to discriminate and identify those who require eleemosynary aid in hospitals, such as cannot be supplied by benefit societies or dispensaries as such, rendered all estimates of them purely conjectural. In my inquiry into the hospital systems of all civilised nations, I could find no authoritative determination of a unit either of area or numbers of the hospital accommodation required in cities, industrial centres, or the country generally. Had it existed, I doubt however if it would have been of much use, or applicable to the very exceptional conditions existing in London, of which there is no parallel in ancient or modern times.

One fact was however at once apparent, viz., the absolute inadequacy of the number of beds contained in the general and special hospitals for the poor only, even if the whole of them were available for that class. It is well known that a large number must be retained for accidents, and for other claims of various kinds, and we have recently been informed in a public inquiry that nearly 2,000 beds are empty for want of funds to fill them. It is equally well known, that some of them at least are occupied by persons who have no claim to be considered as poor in any accepted interpretation of the word, and who are

probably able if their exact circumstances were known to pay some part of the cost of their treatment in their own homes, or at provident or other dispensaries, a great abuse of charity for which an effective remedy has not yet been found. Lists of the hospitals of London in 1883 arranged in parishes and districts are appended to this paper, as they may prove useful in the grouping and federation of these institutions, should a special and central board of control and supervision be hereafter appointed.

Reliable figures for an approximate determination of the question have now been collected by Mr. Booth, to which I shall refer more particularly further on.

For exact details connected with the extent of the present hospital accommodation of all classes and kinds in London, I must refer to the excellent tables prepared by the Charity Organisation Society, and appended to their petition to the House of Lords. They would occupy too much space to be quoted here.

My next step was to determine the exact position of all the hospitals and infirmaries of every class in the metropolis, with special reference to their accessibility to the sick poor in their time of need. To ascertain this I had a map drawn to scale, and prepared with great care. In it was also contained a specification of the boundaries of the registration districts of London, with their area and population in 1881. An index to this map, which I have deemed it desirable to reproduce now in its original form, is appended to this address. It forms I think an important land mark in the history of the question under consideration, and to be for that reason deserving of permanent record. It will also be of interest to compare the distribution of the inhabitants of the whole of London with the results of the census of 1891, and with the estimate obtained by Mr. Booth in his invaluable researches.

For more complete realisation of the facts disclosed by the map, I had concentric circles drawn upon it to show the distances of the several institutions from a centre, which for obvious reasons I fixed at Charing Cross. A counterpart of this map will be contained in each copy of the December number of the Society's *Journal*. It is now on the table for the examination of those who may wish to see it.

Taking this then as my point of departure, it will be seen that within a radius of half a mile there were 6 hospitals; within a mile, 19 hospitals, and a lunatic asylum; within a mile and a half, 31 hospitals, with a poor law infirmary and a lunatic asylum; within 2 miles, 39 hospitals and 2 lunatic asylums; and within a radius of 3 miles from the centre indicated, were all the principal hospitals of London at that time. In the outer circle are the chief poor law infirmaries and sick asylums, at present devoted

exclusively to those, many of whom are destitute temporarily by sickness only, and termed, I think erroneously, paupers, instead of the temporarily destitute poor.

Careful reflection, based upon long study and familiarity with the question in all its aspects, led me to the conclusion that nothing short of entire reorganisation—or rather organisation, for nothing deserving the name now exists—of the whole hospital system of the metropolis, would meet the extreme difficulty of the position.

The chief points to be considered appeared to me to be, as to how the aid required can be afforded with the least possible disturbance of existing arrangements, and how the framework and control of the system can be so ordered as to subject these essentially public and charitable institutions, with numerous private privileges, to such regulation and control as shall secure their proper management, both as all important agencies for the relief of suffering, and as necessary instruments for the education and training of the medical profession, and the advance of the science and art of medicine.

It would be manifestly impossible, or rather impracticable, to remove some of the older hospitals from their present positions and to reconstruct them elsewhere, as was done in exceptional circumstances with St. Thomas's Hospital. Irrespective of the enormous cost of such a proceeding, and the entire dislocation of a system of which the long continuance has constituted what many of its supporters regard as a prescriptive right, it is not necessary to do so, if proper use be made of the magnificent poor law infirmaries, with an extension of their usefulness, when a radical change in their character is sanctioned by the Legislature, as I shall endeavour to show anon.

It is difficult in treating the question as a whole, dealing as it does with so vast an aggregation of human beings in a restricted area, to consider it in a strictly logical manner. Hence I think a brief reference to the public feeling underlying it, which is at the root of the matter, will not be considered out of place. The question of charity underlies, if it does not cause the failure of, all plans dealing with the time-honoured defects of the present system, to secure to the honest, necessitous, and deserving poor, massed in large numbers, and living in gravely insanitary surroundings, needful and prompt help in severe or disabling sickness, without the intrusion of any moral or social degradation.

Private charity when well and wisely directed may, and for a very long time did, with the aid of religion, cover the whole ground in communities of every member of which the lives, characters, and social circumstances (*état civil*) were known. But,

even in this comparatively limited field, it has become mixed up with such various incompatible matters, and so crushed by the heavy weight it has to bear, as to be no longer in harmony with the spirit of the age or the willingness of any class of the community to submit to the domination of doles in such circumstances.

The first, the most important, and the most difficult step in the organisation of the relief of sickness in hospitals among the deserving poor, is the separation of such relief from the pains and penalties of pauperism, and its treatment as a question of public health.

It is however only an extension of the principle already allowed in the Medical Relief Disqualification Removal Bill, and on far safer ground than that on which this form of medical relief is based.

The objections of the most able and conscientious opponents of the Bill were, that it interfered with the cultivation of thrift, encouraged people to mis-spend upon themselves money which ought to go to benefit societies and sick clubs, and was opposed to the sound principle of the great Poor Act of 1834, of which it was said to alter the character entirely. Professor Fawcett deemed it unwise liberality and injurious laxity.

It is difficult to interpret the debate on the question in any other sense than that the Bill was a skilfully veiled Act for the cultivation of votes, but I am quite unable to accept for it the denomination of its being "ignorant philanthropy."

We now fortunately have authentic figures regarding the poor of East London, Hackney, and the Tower Hamlets, and it is impossible to overestimate the value of the results already obtained in gauging their application to the solution of such questions as are contained in my contention. Of the labours of Mr. Booth in this most desirable direction, no less an authority than Professor Marshall has stated, that every line of his report (in his papers read before this Society) is deserving of careful study.

In the figures since collected for the whole of London, which I have been privileged to see, much additional light, and of a favourable character, is thrown upon the questions involved; but as for my purpose it is not necessary to go behind those figures, as they stand in the *Journal* of our Society (vols. I and II), I shall content myself with reproducing them.

Mr. Booth, in his classification of the poor sinking to want, groups them in four classes:—

A. Loafers	50,000
B. Casual earnings	300,000
C. Irregular wages	250,000
D Regular earnings on low pay	400,000

Without indulging in any sensational or mere sentimental view of the matter, it is, I venture to think, appalling to find that in the whole of London to which the estimated figures refer, there are a million of human beings living in a state bordering on want, for the majority of whom eleemosynary aid would doubtless be required in sickness, in the event of their being attacked by illness which could not be safely treated in their own homes, whether they are able to make some provision for it or not. The majority of these are fit objects of charity, public or private, and regarding them Sir John Simon has stated in his recent able work on "English Sanitary Institutions:" "Developed civilisation can provide, and most imperatively ought to provide generous rules "for the relief of its impotent and casually destitute classes."

Now, the cultivation of thrift is a very excellent thing in itself, and the Poor Laws are good and wise laws when properly administered; but there are older laws than the Act of 1834, and the success of all forms of cultivation depends upon soil and surroundings. Where the laws of Nature are in conflict with economic principles, it is not the former which should give way.

The older laws I refer to are the laws of our common humanity, which ought never, in my humble judgment, to be set aside from any motive of expediency, however apparently strong it may be considered.

If it can be shown, as I believe it can, that the withholding of unconditional hospital relief in temporary destitution resulting from acute sickness in any of Mr. Booth's classes is likely to, and does, as a matter of fact, cause grievous hurt, then I cannot but consider that proceeding inequitable, in the working of the poor laws. The cases may possibly be comparatively few, and we have as yet no statistics to show how this is, but the evil is great and ought never to be permitted to arise.

The deserving poor, for whom I specially, but not entirely, plead, naturally shrink from accepting relief in a form repugnant to their feelings of independence and self-reliance, by being classed as paupers if admitted to the separate poor law infirmaries, which they would be at once on a relief order, if they applied for it.

If they are compelled to seek and fail to find at once the required relief elsewhere in the hour of their urgent need, they incur the risk of a serious aggravation of their disease, and of converting a perfectly curable attack when taken in time, into an incurable chronic affection, and occasionally it may prove a sentence of death.

I have been unable to ascertain the working of the Act, which has been long enough in operation to test its evil influence on thriftiness in its various forms, should such evils have occurred.

But, in any case, having admitted the principle in the form most liable to abuse, it is to be hoped that the Legislature will see its way to the extension of the dispauperisation in the direction in which it would be most useful in its medical, and least harmful in its social and economic influence. There are manifest indications in the present state of public feeling on the subject that the time has arrived for the reconsideration of such portion of the poor laws, as press too heavily upon the deserving poor.

At the recent meeting of the British Association, a discussion arose on the policy of discriminating between the deserving and the undeserving poor; but as no moral barometer has yet been constructed to indicate with any approach to accuracy the diagnostic signs of one or the other class, it was determined to let it alone, lest more harm than good should result from the attempt.

The president of the section, Professor Marshall, however, was of opinion that how the poor were best to be treated, or in a different way from the present, is a problem of the time.

Mr. Booth says, I think rightly, regarding his division D, "that no class deserves greater sympathy than this one: its members live hard lives very patiently, and are schooled by their lot in the virtues on which their existence depends."

For my part, I presume that to succeed in the struggle for existence, while living on the verge of starvation, without coming upon the rates, is amply sufficient to constitute a claim to be classed among the deserving poor. This class can have no sufficient margin to permit of the practice of such thrift as will enable them to meet and face successfully sickness of a temporary or permanent disabling character. Hence they are compelled, if they cannot find a refuge in any general hospital, to accept the relief in the only way in which it is now procurable in such circumstances, and to submit to the pains and penalties of pauperism, which cannot be deprived of the sense of personal degradation attached to it. Sir John Simon has recently said, in his terse and telling way, that "Sickness, in the case of the poor, is as terrible an aggravation of the poverty, as the poverty is an aggravation of the sickness; and the sickness irrespective of what widowhood and orphanhood it may occasion, is almost a necessary cause of at least temporary dependence on the poor rates."

All of the foregoing contentions are, in various degrees social, medical, and not without a sentimental aspect, yet they do not exhaust the whole question of sickness among the poor. There is likewise an economic view which is seldom regarded, and yet is not without value in determining the right manner of dealing with that sickness. The only person of any authority who has attempted to face it fairly was the late Sir Edwin Chadwick, who, with respect

to Manchester, estimated that the cost of avoidable death and sickness in that city in 1881 amounted to 7s. annually for each of the inhabitants, representing an outlay of 51,800*l.* annually, for the population of Manchester at that time.

Without entering upon the question of the death-rate as influenced by the insanitary conditions of occupations, dwellings and surroundings generally, as causes of sickness, we must specially note the part played by hospitals in this great drama. It is a standing reproach to us that we have not the figures necessary to determine this. As it is, the death-rate in hospitals, so far as it has at present been ascertained, is not a safe or satisfactory test, as shown in the tables of Drs. Guy and Steele, published in the *Journal* of this Society, as stated by Mr. Lawson Tait in his work on "Hospital Mortality," published in 1877, and as dwelt upon by M. Husson, in his "*Étude sur les Hôpitaux de Paris.*"

The question is too wide to be discussed here, but I may state that some of the general and special hospitals discharge patients after a certain period of detention prior to cure, in order to empty the beds, doubtless for what they consider good reasons. These cases find their way into the poor law infirmaries, where they remain until cure or death results. I need scarcely point out how much and how seriously this practice must affect the returns of these hospitals in relation to their cost, the result of plans of treatment adopted, and the mortality of the institutions. The subject therefore is one which, I think, ought not to be disregarded or lost sight of in considering this question.

I have dwelt thus long, but I hope not unnecessarily, upon this part of the hospital system, both because of the blighting sickness, due to numberless causes beyond the control of the poor, which carries so many of them to an early grave, and because it is at the root of many of the most important shortcomings charged against the existing hospital system.

Should then the new condition of dispauperisation which I advocate be adopted, the next step will be to provide hospital accommodation for all acute cases among the *real* poor, which need an amount of skilled care and attention procurable only in public institutions.

Fortunately, thanks to the admirable and prescient care with which the local government system has been worked, these hospitals already exist in the sick asylums and poor law infirmaries of London, and need not the expenditure of a single shilling to render them the best general hospitals in the kingdom with respect to their structural arrangements, and means of classifying and treating the sick of all kinds, medical and surgical. All they would require would be such increase to their establishments as may be

found necessary to fit them for their extended use, not on the extravagant scale of those of our general hospitals to which schools are attached, and to which they are said to be somewhat sacrificed, but on the very much more modest requirements of the sick only, a matter which can be safely left to the future central board, which I hope will be created, to regulate the entire hospital system of the metropolis.

The infirmaries to which I refer above, are now encumbered with large numbers of the incurable, the aged, and infirm, and cases discharged from the general hospitals, possibly when they are no longer of sufficient interest to be retained in them, a matter on which exact information will probably be called for from the medical officers in charge of them. The necessary restraints and inelastic regulations of all hospitals are not only unsuited for, but a sore affliction to most of such cases, to whom a certain extent of freedom of movement are sources of great comfort. These cases, as a rule, require little or no medical treatment, and do not demand the expensive nursing and other agencies of a general hospital.

The whole of these institutions should, I am of opinion, remain under the charge of the poor law authorities, who *do* take great care to prevent the abuses of charity, which seem to be more or less inseparable from every uncontrolled institution. Upon this point again we have the views of one of the most able administrators ever connected with the local government department, Sir John Simon. He says: "Among the most flagrant illustrations of the 'general case' (abuses of medical charity) 'are the facts regarding 'the very numerous medical charities of London: . . . all of them 'more or less mendicant or expectant as to charitable gifts from 'the public, and most of them loud in professing financial difficulties, yet none of them under any sort of exterior audit or control: 'all of them independent of each other: all of them free from any 'relation to the admirable system of asylums, infirmaries, and dispensaries which the poor law has at work within the same area: 'all, or nearly all of them—except so far as subscribers' tickets 'may be required, and the individual subscribers may choose to 'investigate—ready to give gratuitous medical treatment without 'any sort of inquiry whether the recipient is really so poor as to 'need that form of alms; and the chief of them giving out-patient 'treatment in this indiscriminate way, on so immense a scale as to 'raise doubts against the value of what they give.'"⁴

Attempts have recently been made to diminish some of the evils pointed out, but they do not appear to me to be so conducted as to secure satisfactorily the end intended. I myself, many years ago,

⁴ The general thesis (of which this is a particular illustration) refers to abuse of *private* charity.

worked an out-patient's department, both as an instrument of medical relief, and a source of supply of cases of clinical interest for the hospital and school to which I was attached, and I concur in very much which has been urged for some years past in London, against not the *use*, but the *abuse* of the system still in existence.

X.—*A Hospital Board for London.*

With the exception of the poor law institutions above referred to, the hospitals of London are under no other control or supervision than those of their own establishments and supporters. They represent an order of things which in every other class of public institutions of like character has passed away. As a body, or even individually, they render no connected account⁵ of their

⁵ Since I delivered my address, my attention has been directed to a passage in the report of Sir John Simon in 1863, respecting the non-medical aspects of a proper system of hospital returns and reports, which I had overlooked, but which bears out so completely my contention, that I deem it advisable to reproduce it at the present time, as showing how accurately he had spotted the defects pointed out by him, and foretold how the evil could best be remedied in the interests alike of the institutions and of the charitable public by whom they are supported.

In it he said: "In a preceding passage of this report I have suggested that it is, for various reasons, incumbent on the managers of hospitals to cause such records to be kept as may show what work is done in each hospital, and what is the successfulness of the work. And now, in conclusion, I will venture to submit my opinion, that it would conduce very considerably to an improved administration of funds given for purposes of medical charity, if some department of the Government were annually to collect all such records, and to publish from them information which would enable just comparisons to be made between the doings of different institutions, and the proportions which such doings bear to the requirements of the respective neighbourhoods. Indeed, not only with reference to the general hospitals to which my previous remarks have always referred, but with reference to all medical charities, it seems to me that something of that kind is greatly wanted. In saying this, I do not only refer to that very wholesome emulation and progress in the art of healing, which it would be the tendency of such a publication to develop among the different institutions of the country, but refer also and emphatically to a non-medical aspect of the question. At present, when the public is appealed to, as incessantly it is, to give money to this or that new undertaking for professed purposes of medical charity, it is almost wholly without means of judging how far the particular purposes are already accomplished. It has only *ex parte* statements before it. Nor can it well judge of the needs and merits of established charities, excepting by such statements as the directors of some charities put forth,—statements which for the most part are framed solely with the view of moving public sympathy, and which, in order to gain this object, are often highly coloured and partial. The want of something like method in matters of medical charity leads to an infinite waste of charitable resources, and doubtless this waste (after the manner of all wastes) implies privation in one place as against superfluity in others,—here an overlapping and duplication of well intended charity, and there comparative bareness and destitution. A perfectly harmonious organisation of these matters (such an organisation as there is in Paris under the Bureau de l'Assistance Publique) is of course not to be expected under that system of voluntary co-operation which distinguishes the charities of this country. But, at least, an approximation to it might be made—and an

proceedings in finance, medical statistics, and similar matters of general and scientific interest, to enable the public or the profession, to form a correct estimate of the worth of their work.

All medical establishments of the character of hospitals are public institutions, and essentially charities in their chief aim and purpose, the treatment of the sick poor, which should not be subordinated to any other use. From their very nature they need the most careful regulation, and to be dealt with as all other charities are. No one has ever questioned the value of the work performed within the walls of those of established character. They are in this respect monuments of science, skill, and philanthropy of the purest and most elevated type. But the isolated and independent action of the different institutions robs them of much of their usefulness, and tends to impair the higher ends expected from them.

We live in a time when combined action and organisation are the watchwords of the age, and it is no reproach to the older institutions that, in this respect, they are not in harmony with them.

Their removal from strict public scrutiny is, in my belief, one of the reasons of the withholding of the pecuniary support which they formerly received, added to the phenomenal growth of the population of London, which has outstripped the ordinary means of dealing with difficulties.

The remedy for the present evil, so forcibly represented in the memorandum of the Charity Organisation Society, will, I think, be found in the creation of a Central Board of Supervision, in which all the interests concerned should be fairly represented; which should, for the present, leave untouched the usual procedure of all authorities connected with existing institutions; should have power of control and supervision similar to those now possessed and exercised by such a body as the Metropolitan Asylums Board, and armed with authority to call for detailed returns, upon an uniform plan, of finance and statistics, with a view to their digest and publication annually, in such manner as may be deemed most useful.

To enable such a body to be created so as to exercise effective control over the hospitals of the metropolis, hospital London should, I think, be divided into five sections, corresponding to the five

approximation which would not involve the smallest sacrifice of any one institution's independence, if the public could have before it such authentic materials as I propose, for forming a judgment on the distribution and efficiency of all means of medical relief.

"It would be essential to the usefulness of any such publication that the records which it would purport to compare should be records kept on an uniform plan."

Sixth Report of Medical Officer of the Privy Council, 1863, pp. 74 and 75.

registration districts, of which the population, as ascertained in 1881, is noted below :—

Districts.	Area in Acres.	Population in 1881.	Number of Persons per Acre.	Number of Hospitals in each District.	Number of Hospitals to the Square Mile.	Number of Beds.	Ratio of Beds to the Population 1 to
West District	10,399	669,633	64	27	1·7	4,497	149
North „	13,468	905,947	67	29	1·4	4,289	211
Central „	2,132	282,238	132	17	5·2	1,979	142
East „	5,500	692,738	126	15	1·7	5,717	121
South „	43,835	1,265,927	29	23	0·3	7,555	168
Total.....	75,334	3,816,483	51	111	0·9	24,037	159

The Central Board should contain representatives from all the great hospitals of the five districts; should be distinctly elective in character; should consist of the lay and medical elements in equal proportions; and should comprise a sufficient number of members to admit of the formation of an executive committee for each district. It should perform in addition such of the functions of the Bureau d'Assistance Publique in Paris as can fairly be engrafted upon our manner of managing matters, with no further assistance from the State than the bestowal of legislative sanction to so much of the plan as requires parliamentary authority.

To attempt in an opening address to work out this, or any other scheme that may be suggested for so exceptional a city as London is manifestly impossible; I must therefore content myself with its mere mention. In any case it will need much and careful inquiry to determine what ought ultimately to be done, and what is immediately practicable.

Having referred to the Metropolitan Asylums Board as an institution of similar character, I deem it right to bring to your notice its manner of performance of a most important part of its work—that which has immediate relation to the functions of this Society—the collection of statistics to illustrate the nature and results of its labours.

The special duties of this board are to superintend the fever hospitals and pauper lunatic asylums of the metropolis, in the interests of public health and the prevention of the extension of infectious diseases. To this have been added the regulation of the ambulance system, and the management of a training ship.

The effective control of the spread of infectious fevers is a far more difficult task than the management of ordinary diseases and accidents, inasmuch as the one only affects the individual, whilst the other, if unchecked, may become disastrous to whole communities.

The report of the statistical committee of the Asylums Board for 1889 is on the table, and I recommend all interested in this hospital question to study it carefully, for the information contained in it is certainly the best yet afforded by any official body, in the branch of statistics to which it refers.

It is emphatically a move in the right direction, and its diagrams, maps, and the other methods of illustration employed, are well deserving of imitation when the collective statistics of our general hospitals are obtained, which I hope and believe are now fairly within the range of practical politics.

The regulation of the ambulance system of the board is also excellent.

If equally skilled care and attention are bestowed in the more extended control of the hospital system of London, by a properly organised and authoritative central board, the various faults found with the existing uncontrolled system, can be dealt with in the only manner likely to be attended with success. The absence of a proper system of independent inspection; the irregularities of the out-patients' departments; the regulation of the relations of the schools to the hospitals; the discipline, duty, and training of nurses; the suppression of all useless or mischievous special hospitals, and the prevention of the creation of others of similar character; the adoption, audit, and publication of an uniform system of accounts; a scientific, but simple collection and annual publication of the medical statistics of all hospitals on a uniform plan; the extension of institutions for the reception of convalescents, and the various side issues which are constantly arising, are all many sided questions which require patient investigation by a skilled agency, armed with authority to deal with them decisively, before any change is attempted. All this is a question of time, for the radical reform of old institutions to be permanent as well as to find acceptance, must be of slow growth. Structures which from time to time need removal or renewal, should be built up again, as much as possible on pre-existing foundations.

The reform in this instance has been forced by pressure from without, but must be effected by careful consideration from within. Probably no fitter occasion could have been found to make such changes as may be required in the whole hospital system, than the present, when both the art and science of medicine itself are undergoing such rapid and radical changes, as already to have revolutionised some of their procedure and practice in very important directions, and to indicate still greater changes in the immediate future, all tending to the saving of life, the increase of the standard of health, and the general wellbeing of mankind. More substantial advances have been made in therapeutics and surgical procedure in

the present century, than in the whole anterior history of medicine, at all events since the immortal discovery of Harvey. Preventive has become the twin sister of curative medicine, under the leading of Jenner, and has taken its place in the forefront of Biology. But, based as it is upon the advances of physiology and pathology, and the application of the methods of organic chemistry and physics, its conduct must be entrusted to professional hands, and not confided to benevolent empiricism of any kind or complexion. The age of the discovery of anæsthetics, antiseptics, and bacteriology, which have immortalised the Simpsons, Listers, Pasteurs, and Kochs of England, France, and Germany, sheds an undying lustre upon our noble profession. In the general advance hospitals must share, and should submit to do so with a good grace—for, as said by an eminent French physician a short while since, “*La médecine entière est à refaire.*”

It would be a grave and abiding subject of regret if public confidence were shaken in the conduct of the valuable institutions devoted to the highest purposes of charity and benevolence. The veil which at present screens the occurrences of sick wards should not be lifted lightly.

There is a season, said Cardinal Newman metaphorically in his “*Apologia*,” “when doors are closed and curtains drawn, and when the sick man neither cares nor is able to record the stages of his malady.”

The practice which has arisen of late years of admitting the outside world to the sanctuary of the sick room of public and other men of mark, and thus of pandering, however unintentionally, to the depraved craving for news, which is an unhealthy characteristic of our time, is, I think, much to be deprecated. Rich and poor alike ought to be beyond its reach.

Let us not then in dealing with this hospital question, do harm where nothing but good is intended, by indiscreet revelations or ill-timed reproaches. They will not assist us in arriving at a right judgment on any procedure which demands change or amendment, and in this matter the interests of the rich and poor are identical, for “there is little difference in serious sickness between Cæsar and a sick child,” the sickness itself being no respecter of persons, whilst we all know that “*Pallida mors æquo pulsat pede pauperum tabernas, regum que turres.*”

XI.—*Conclusion.*

In conclusion, I think I may fairly congratulate you on the continued prosperity of the Society, as shown by the Report of the Council in June last, reviewing the work of the past session

of 1889-90. In that important and satisfactory statement,⁶ are contained the particulars of the roll of Fellows in 1889, with the average for the previous ten years, as follows:—

	1889.	Average of the previous Ten Years.
Number of Fellows on 31st December	1,060	886
Life Members included in the above	175	146
Numbers lost by death, withdrawal, or default	69	55
New Fellows elected (and four resignations cancelled)...	70	86

Since the 1st of January last, 59 new Fellows have been elected, making the present number 1,063.

In the same report are contained tabular statements of the finances of the Society for the four years previous to 1889, as well as for the whole of that year, with a comparison of the condition of the Society at intervals of ten years, from 1839, and the particulars of each year of the decade ending 31st of December last. All these returns, which I need not reproduce, are equally favourable. They show that we are liable to the fluctuations incidental to all associations as they grow older, but exhibit no real falling off in public estimation.

The great merit of some, and the usefulness of all the papers read and discussed, deserved and received fitting acknowledgment.

But, I venture to think, as recommended by the Council in the report referred to, that more energetic action, and greater publicity of our proceedings are very desirable, and indeed almost a necessity of our future usefulness and progress.

There has probably never, in the history of our country during the century now drawing to a close, been a time when fads, fallacies, and economic heresies have been more numerous and mischievous than they are at present.

Those which are merely foolish may safely be disregarded, for if left alone, although they may cause some harm during their brief existence, they speedily perish from inanition. But, those which are founded on the honest belief of earnest, well meaning advocates, who only need light and leading to set them right, and who are open to conviction when shown to be wrong, should be treated with respectful consideration, and no effort should be spared to place before them the facts and figures applicable to their several contentions, to procure the desired result.

It is the privilege and province of Statistical Science to assist in guiding the public opinion of the country in all social and

⁶ *Journal of the Royal Statistical Society*, vol. liii, part i, p. 111; part iii, pp. 358—76.

economic questions, by the rigorous application of its methods of dispelling error and establishing truth, whenever and wherever they admit of treatment by the numerical method.

We are now in a transition state, and passing through a complete and somewhat noisy revolution, in which old landmarks are fast disappearing, and new conditions of life in association arising which need new methods of treatment to prevent their becoming instruments of evil, instead of agencies of good. The complex conditions of modern life in its social and economic relations, appear to be no longer susceptible of regulation by the wisdom of the ancients. *Laissez passer* and *laissez faire*, in their conventional, not their historical meaning, are no longer in accord with the temper of the times. "Why can't you leave it alone?" is no longer a Delphic oracle, and "why can't I do as I like with my own?" would not now be tolerated. Those who are unable, or unwilling to march in the van of progress, must be content to be left behind or to stagnate, which in the moral as in the material world is to die and be forgotten.

The *Nouvelles Couches Sociales*, which are coming—indeed, some of them have already come—to the front, will not allow us to "rest and be thankful." They are the heirs presumptive of the present, and will be the masters of the future in some of the most important relations of life in association.

Hence, as ours is not a political or party association, owes no allegiance to any sect, is subject to no State control, and is fettered by no traditions to limit its action in matters which come fairly within its province or scope, we can afford to hold the scales with the strictest impartiality, to apply to all social, scientific, and economic questions the "lynx-eyed scrutiny of dispassionate analysis," and to afford to all searchers after truth, in matters which admit of the application of numbers to determine the laws which regulate them, the materials of their several contentions, in their simple integrity, without any of the alloys which unhappily too frequently debase their currency.

APPENDIX.

Note on the Medical Statistics of Hospitals.

As I could not find room in my address for more than a mere mention of the importance and necessity of information on the subject of the medical statistics of hospitals, I have deemed it expedient to place a few remarks in the appendix, to draw more special attention to it, for its value cannot be over-rated.

By no one has this value and the need of figures as exponents of facts in relation to the work of hospitals, been more powerfully stated than by Sir John Simon, in his review of the reports of Messrs. Bristow and Holmes on the hospitals of the United Kingdom, in 1863. In it he says, after speaking of the need of detailed returns of deaths from all causes, medical and surgical, to enable a judgment to be formed of the work and healthiness or otherwise, of hospitals, that—

“It is very much to be regretted that no such returns exist. And adverting again to the point at which I took up this particular illustration of the mode in which special death-rates have to be discussed, I must express my very strong feeling that these are matters on which doubt ought not to be suffered to continue. For, whether a particular hospital or group of hospitals has a disproportionate quantity of unsuccess in the treatment of disease, is not a question of sterile statistical curiosity. The consideration that, where such unsuccess exists, two out of the three solutions which can be suggested for its existence, are solutions which would criminate the hospital or group of hospitals to which they refer, is surely argument enough to show how very greatly it is the interest of properly conducted hospitals to cause full and truthful records of their respective experiences in such matters to be kept. And if it is the interest of such hospitals also, I will venture to say it is their duty, and the duty of all. Indeed I beg leave to extend this expression of opinion to the entire matter of hospital experience. The doings of hospitals and the relative successfulness of such doings, are of great public importance; and all questions concerning them ought to admit of being answered quite unambiguously to the public. For while hospitals claim to be exempt from taxation on the ground that they render service for which otherwise the community must be taxed, the community may surely require to be satisfied by precise information as to the value of the service which is rendered. In none but the largest hospitals could the task of keeping such records be of anything like troublesome amount. And in these particular cases, there exists an additional and special reason why even a really troublesome duty ought not on any account to be declined. Such hospitals are, always or generally, our great schools of professional study. And assuredly no hospital school of medicine and surgery is doing its full duty, unless it takes all possible means for recording the hospital experience in forms which shall test the efficiency of present practice, and ensure the promptest possible recognition of progress. No school of medicine deserves its name unless it be the scene of constant labour for improvement in professional science; and scientific medicine cannot be supposed to rest its belief on vague oral traditions of experience.

“Let not however the preceding observations be misunderstood. My point is, that, during the present grievous imperfectness of hospital statistics, we cannot by

such statistics accurately compare even in part (much less in entirety), the success of one hospital with the success of other hospitals, nor, *à fortiori*, the healthiness of one hospital with the healthiness of others. And I deem this to be a public wrong, and a bar to scientific progress.”⁷

In its early history this Society appointed a special Committee to collect hospital statistics, and it presented two reports, which were of necessity incomplete from the imperfect records available, and the indisposition of some hospital authorities to furnish any information at all.

Valuable communications from Dr. Guy, and two papers of great interest from Dr. Steele on the subject, are also contained in our transactions, as well as occasional stray notices on partial and particular points, all more or less to the purpose; but no connected view of the whole subject as a special and important branch of vital statistics has ever been brought under our notice. This I cannot help regarding as a serious reproach, to whatever cause it may be due. Upon the subject I hope I may be pardoned for quoting from a paper which I read before the Epidemiological Society in May, 1877.⁸

In it I stated that “it cannot be contested that questions concerning the life, health, growth, development, decline, and decay of man in his mental and physical relations are of at least equal importance with matters concerning his social and political state. The movements of commerce, the administration of justice, legislative measures generally, and all that concerns the wellbeing of society as a civilised community, are constant objects of statistical inquiry, of which it would be difficult to overestimate the importance.

“And yet does every one of them, or do they all together, touch more closely the happiness and wellbeing of man as an individual entity, than those which affect each of us personally from the cradle to the grave?”

“In the public discussions on almost all practical questions bearing on health and disease, such as hospital construction and management, the disposal of sewage in its hygienic relations, the causes of epidemic outbreaks of disease, and many similar matters, it is painful to witness the groping in the dark, and the widely divergent conclusions at which even observers of eminence arrive, from the absence of any thoroughly reliable foundation of fact on which to construct sound measures of prevention or removal. Statistics alone cannot solve such questions, but they can clear the way for their scientific consideration, and by determining the exact cause of an evil, lead by strictly inductive processes to the measures likely to be efficacious in removing it or mitigating its effects.

“Among the questions which press most urgently for solution is that, for example, of a proper system of hospital record to determine a number of questions which demand the scientific application of large numbers for their solution. The statistics heretofore collected are constructed on far too narrow a basis to afford more than a very rough idea of the risks to life from treatment in public institutions.”

The same view was taken by M. Husson in 1862 in his great work, “*Étude sur les Hôpitaux de Paris*,” of which, in the eleventh

⁷ Sixth Report of the Medical Officer of the Privy Council, 1863, p. 51—an invaluable record.

⁸ “Transactions of the Epidemiological Society,” vol. iv, part 1.

section, under the head of the medical statistics of hospitals, he remarked:—

“After an attentive study of all the material ameliorations which the administration has introduced into the service of the hospitals, it remains to examine the results attained by so many efforts and so much solicitude for the care of the sick.

“Figures, rigorously exact, can alone enlighten us upon this point; but it is unfortunately only too certain that beyond the tables of mortality published annually, and which present in an abstract form the relation of the numbers of admissions to that of deaths, the hospitals of Paris have never possessed the essential and indispensable elements of a rational and conclusive system of statistics.

“It is true that since 1837, the administration has gathered together from each hospital an account of their great surgical operations and their results. But this is only a special side of the question, and with regard to it we shall see anon how defective these statements, the object of a special examination of a particular subject, really are.

“It should be then with the greatest reserve that the tables published by the administration since 1804 must be studied, to ascertain the death-rate in the hospitals and the average duration of the treatment.

“These documents can be studied with profit only on the understanding that they contain general facts and summaries from which the light of circumstantial details is absent.”⁹

It is singular that so long ago as 1788, in the most remarkable work ever written on hospitals considering the time of its production, that of the celebrated M. Tenon, he makes the same complaint of the absence of all information, and even of the principles necessary to form a judgment of the perfections or imperfections of hospitals: “il fallait donc commencer par se les procurer.”

This subject has occupied my attention for many years past. When I landed in Madras in 1840, I stayed with the Inspector-General of Hospitals while the ship in which I left England was in the Roads, and he placed in my hands the returns for ten years of the European army in that Presidency to overrun for him. These I reduced to order and tabulated, and they were published in the “*Calcutta Journal of Natural History*.”

As the resident Professor of the Medical College, I collected and published, as I have already mentioned, the statistics of the hospital attached to it for the first seven years of my incumbency.

During my long connection with the Prison Department of Bengal, I published annually very detailed statistics of the diseases and mortality of the prisoners under my charge, in the form kindly furnished to me by the late Dr. Farr, long before I was personally acquainted with him.

In the three papers on the subject of prisons which I read before this Society, will be found an abstract of the principal facts relating to them contained in my official reports.

⁹ “*Étude sur les Hôpitaux*.” Par Armand Husson. 4to. Paris, 1862, pp. 247—48.

I venture, therefore, again, to place within the reach of a wider circle of readers what I wrote on the subject in 1874, which was published in a professional publication of limited circulation.

In my communication to the Epidemiological Society on medical statistics in 1874, I stated that:—

“There is, probably, no branch of human knowledge to which the application of the numerical method is better fitted, and from which it is calculated to yield a richer harvest of valuable truth, than to the logical interpretation of the facts of medical science.

“There is, at the same time, certainly none other in which it is more necessary to guard against the fallacies incidental to, and, in some degree inseparable from, this method of inquiry; in which more rigorous accuracy is necessary in the collection of the facts themselves, and in which greater caution is demanded to avoid hasty or dogmatic deductions from mere numerical results.

“If it be true that the medical art is entirely one of observation, it is equally true that these observations should, from time to time, be subjected to the strict scrutiny that mathematical science alone is capable of supplying. By this means only can we hope to eliminate from them the sources of error to which all human observations are liable, and to deduce from them the general laws by which the phenomena to which they relate are explained, and from which the practical experience is to be derived that, in the eloquent language of Andral, ‘formulates the past, renders the present fruitful, and prepares the future.’

“At the same time it cannot be denied that the facts of medical science are so complex in their nature, so liable to be influenced by an infinite number of collateral and minor considerations, which it is well-nigh impossible to take into account with the minute detail necessary to absolute accuracy, as to render the application of numbers to their solution, much more difficult than to the interpretation of the facts of physical science, or even to those of social economy, which form the only sound basis of modern legislation.

“The careful collection of the statistics of population in the admirable returns of the Registrar-General of England, together with the periodical census now taken in all civilised countries, leave little to desire in making us acquainted with the logic of the facts to which they refer.

“But there is a logic underlying the facts which they do not, and probably are not intended to explain. They illustrate the cardinal conditions in which we live and die, increase and multiply, and toil and moil in the great struggle imposed upon us by modern society and civilisation. They likewise show us the weak points in our armour of defence against the thousand agencies constantly at work to deteriorate or destroy the fair fabric which has been created in God's own image, and to abridge the natural span of existence accorded to it by the Divine Creator.

“The very valuable records of the late Health Department of the Privy Council, those of the Local Government Board, and the numerous sanitary reports perpetually issuing in never-ending streams at home and abroad, deal more or less completely with the weak points above referred to, endeavour to ascertain their causes, and to suggest remedies for their removal.

“But the very abundance of the materials at our command is itself a cause of confusion in dealing with the facts themselves, and so long as they are not subjected to rigorous analysis, in the only manner by which we can trace back the effects or incidence of particular diseases to their exact cause or causes, so long shall we be unable to deal with them efficiently in the measures necessary for their mitigation or removal.

“It would be out of place at the present time to consider or discuss the principles which should regulate the collection of medical statistics; yet it would not be without interest to ascertain why those principles are so little understood or applied now-a-days, when we are probably in a better position to use them with

effect than were our predecessors at any period since the discovery of printing, or since the more exact methods of inquiry and observation, now in general use, have been taught in our schools.

“Our national habits, and the reliance on individual exertion, to which we owe so much of our advanced position among nations, is probably some, if not a great hindrance to the conduct of scientific inquiry in such manner as to utilise the observations and experience of the many, by the skilled labour of a few. It is only by a central authority, armed with the power of compelling the collection of the facts in a proper manner, and possessing the knowledge and skill necessary to utilise them, that this desirable result can be obtained. Hence, I sometimes hear with regret, expressions indicative of what I cannot but consider a misapprehension of the real uses of a central authority.

“If rightly and judiciously directed, I regard such central authority as a fly-wheel to equalise and regulate the action of local self-governing bodies, and in no way to perform their functions or to interfere with their full and legitimate liberty of action, within the limits of the laws by which we are all bound.”

My apology for reproducing the above remarks is that in all the discussions on hospital reform the subject of their medical statistics appears to be almost completely ignored, an omission which I have endeavoured in some measure to supply.

TABLE A.—Hospitals of London arranged in Parishes.

Parish.	Area of Parish in Acres.	Population in 1881.	Number of Persons per Acre.	Number of Hospitals in each Parish.	Number of Hospitals to the Square Mile.	Number of Beds.
Battersea	2,170	107,262	49	1	1 to 3'4	380
Bethnal Green	755	126,961	168	2	1 „ 0'59	574
Bow	563	37,074	66	1	1 „ 0'9	1,641
Camberwell	4,450	186,593	42	3	1 „ 2'3	873
Chelsea	796	88,128	111	7	1 „ 0'2	1,511
Clapham	1,137	36,380	32	1	1 „ 1'8	56
Deptford	1,680	84,653	50	1	1 „ 2'6	330
Fulham	1,716	42,900	25	1	1 „ 2'7	240
Greenwich	1,741	46,580	27	1	1 „ 2'7	247
Hackney	3,297	163,681	50	4	1 „ 1'3	864
Hammersmith	2,287	71,939	31	1	1 „ 3'6	44
Hampstead	2,248	45,452	20	2	1 „ 1'8	342
Islington	3,107	282,865	91	6	1 „ 0'8	1,492
Kensington	2,190	163,151	74	3	1 „ 1'1	1,667
Kingston	7,229	35,829	5	1	1 „ 11'3	150
Lambeth	3,942	253,699	64	5	1 „ 1'2	2,185
Lewisham	5,774	53,065	9	1	1 „ 9'0	33
Mile End Old Town	679	105,613	156	1 & 1 partly	—	453
Newington	631	107,850	171	1	1 to 1'0	572
Paddington	1,251	107,218	86	3	1 „ 0'6	221
Plumstead	3,388	33,250	10	1	1 „ 5'3	213
Rotherhithe	754	36,024	48	1	1 „ 1'2	388
Saffron Hill	30	3,980	133	1	1 „ 0'05	24
St. Andrew, Holborn	112	28,874	258	6	1 „ 0'03	100
St. Anne, Soho	54	16,608	307	5	5 „ 0'08	148
St. Bartholomew-the-Less	4	819	205	1	1 „ 0'006	710
St. Clement's Danes	53	10,280	194	1	1 „ 0'08	200
St. George, Hanover Square	1,119	89,573	80	3	1 „ 0'56	418
„ Southwark	284	58,652	207	3	1 „ 0'14	386
„ in-the-East	243	47,157	194	1	1 „ 0'4	453
St. Giles-in-the-Fields	123	28,701	233	1	1 „ 0'2	25
St. James, Westminster	162	29,941	184	1	1 „ 0'3	21
St. John, „	211	35,496	168	1	1 „ 0'3	12
St. Leonard, Bromley	608	64,359	106	2 & 1 partly	—	Include
St. Luke	239	46,819	196	4	1 to 0'09	260
St. Margaret, Westminster	604	24,430	40	1	1 „ 0'25	215
St. Martin-in-the-Fields	286	17,508	63	2	1 „ 0'2	430
St. Marylebone	1,506	154,910	103	9	1 „ 0'27	575
St. Olave	48	2,274	47	1 partly	1 „ 0'1	690
St. Pancras	2,672	236,258	88	6	1 „ 0'7	988
St. Saviour, Christchurch	77	13,663	177	1	1 „ 0'1	12
St. Stephen	27	1,799	67	1	1 „ 0'04	100
Shadwell	68	8,170	120	1	1 „ 0'1	90
Shoreditch	648	126,591	195	3	1 „ 0'3	987
Spitalfields	73	21,340	292	1	1 „ 0'11	30
Stoke Newington	638	22,781	36	1	1 „ 1'0	28
St. Saviour, Surrey	127	14,999	118	1 partly	1 „ 0'4	—
Wandsworth	2,433	28,004	12	2	1 „ 1'9	1,190
Whitechapel	170	30,709	181	2	1 „ 0'1	1,489
Total	64,404	3,380,892	52	110	1 to 1'1	24,037

TABLE B.—Hospitals arranged in Districts.

Administration Districts.	Area in Acres.	Population in 1881.	Number of Persons per Acre.	Number of Hospitals in each District.	Number of Hospitals to the Square Mile, 1 to	Number of Beds.	Ratio of Beds to the Population, 1 to
EAST DISTRICT.							
St. Martin's	3,441	270,469	79	6	1'2	1,888	143
St. George's	4,003	114,839	29	3	0'5	556	207
St. James's	796	88,128	111	7	5'8	1,239	71
St. George, Hanover Square	1,943	149,748	77	5	1'6	645	232
St. Martin's	216	46,549	215	6	17'1	169	275
NORTH DISTRICT.							
St. George's	1,506	154,910	103	10	4'3	856	181
St. George's	2,248	45,452	20	2	0'6	342	133
St. George's	2,672	236,258	88	6	1'5	707	334
St. George's	3,107	282,865	91	6	1'25	1,492	189
St. George's	3,935	186,462	47	5	0'8	892	209
CENTRAL DISTRICT.							
St. George's	245	45,382	185	1	2'6	25	1,815
St. George's	403	33,582	83	3	4'7	430	78
St. George's	816	151,835	186	11	9'1	714	212
St. George's, City	668	51,439	77	2	2'0	810	63
EAST DISTRICT.							
St. George's	648	126,591	195	3	3'0	987	128
St. George's	755	126,961	168	2	1'8	574	221
St. George's	378	71,363	189	3	5'1	1,519	47
St. George-in-the-East	243	47,157	194	1	2'6	453	104
St. George's	462	58,543	127	1	1'4	90	650
St. George's	678	105,613	155	1	1'0	453	233
St. George's	2,335	156,510	67	4	1'1	1,641	95
SOUTH DISTRICT.							
St. George's, Southwark	1,119	195,164	174	5	3'0	970	201
St. George's	1,506	134,632	89	2	0'85	1,078	125
St. George's	3,942	253,699	64	5	0'8	2,185	116
St. George's	11,455	210,434	18	4	0'2	1,626	129
St. George's	4,450	186,593	42	3	0'4	873	214
St. George's	3,427	131,233	38	2	0'38	577	227
St. George's	11,436	73,327	6	1	0'056	33	2,222
St. George's	6,500	80,845	12	1	0'1	213	379
Total	75,334	3,816,483	51	111	0'9	24,037	1 to 159

TABLE C.—*Index to Map. Alphabetical List of the Metropolitan Hospitals in the WESTERN DISTRICT.*

Hospital.	Parish.	Number of Parish on the Map.	Number of Hospital on the Map.
Belgrave Hospital for Children	St. George, Hanover Square	VI	1
Cancer Hospital, Brompton	Chelsea	V	1
Chelsea Infirmary, Cale Street, Chelsea	"	V	6
Cheyne Hospital for Children	"	V	2
Epidemic Hospital (Small Pox)	Fulham	III	—
Fulham Union Infirmary	Chelsea	V	—
French Hospital, Leicester Square	St. Anne, Soho	XIX	1
Hospital for Children, Maida Vale	Paddington	IV	3
" Consumption, Fulham Road	Kensington	II	1
" Women, King's Road	Chelsea	V	5
" Soho Square	St. Anne, Soho	XIX	2
" and Children	St. John, Westminster	VIII	—
Kensington Infirmary, Marloes Road	Kensington	II	2
Lock Hospital for Men	St. Anne, Soho	XIX	3
" Women	Paddington	IV	2
Marylebone Infirmary	Kensington	II	3
National Hospital for Heart Disease	St. Anne, Soho	XIX	4
Royal Orthopædic Hospital	St. George, Hanover Square	VI	2
St. George's Hospital, Hyde Park Corner	"	VI	3
" Infirmary, Fulham Road	Chelsea	V	7
St. John's Hospital for Skin Disease	St. Anne, Soho	XIX	5
St. Mary's Hospital	Paddington	IV	3
St. Raphael's Hospital for Men	Chelsea	V	3
Throat Hospital	St. James, Westminster	VII	—
Victoria Hospital for Children	Chelsea	V	4
West London Hospital	Hammersmith	I	—
Westminster Hospital	St. Margaret, Westminster	IX	—

TABLE C *Contd.*—*Index to Map. List of Metropolitan Hospitals in the CENTRAL DISTRICT.*

Hospital.	Parish.	Number of Parish on the Map.	Number of Hospital on the Map.
Chest Disease, Hospital for	St. Luke's	XXII	2
Children with Hip Disease, Hospital for	St. Andrew, Holborn	XX	1
Fistula, St. Mark's Hospital for	St. Luke's	XXII	3
Homeopathic Hospital, the London	St. Andrew, Holborn	XX	4
Incurable Women, Home for	"	XX	2
Lying-in Hospital, the City of London	St. Luke's	XXII	1
Ophthalmic Hospital	St. Stephen	{ XXIII and XXIV }	1
Orthopædic Hospital, the City	Saffron Hill	XXI	1
Paralysed and Epileptic, the National Hospital for	St. Andrew, Holborn	XX	5
St. Bartholomew's Hospital	St. Bartholomew-the-Less	{ XXIII and XXIV }	2
St. John's and St. Elizabeth's Hospital	St. Andrew, Holborn	XX	6
St. Luke's Hospital for Lunatics	St. Luke's	XXII	4
Sick Children, Hospital for	St. Andrew, Holborn	XX	3



Contd.—Index to Map. List of Metropolitan Hospitals in the SOUTHERN DISTRICT.

Hospital.	Parish.	Number of Parish on the Map.	Number of Hospital on the Map.
Hospital for Lunatics	St. George the Martyr.....	XXXIV	3
Well House for Lunatics	Camberwell	XLI	1
Infirmary	"	XLI	3
Hospital for Children.....	St. George the Martyr.....	XXXIV	1
ch Infirmary	Greenwich.....	XLIV	—
ospital	St. Olave	XXXI	—
.....	St. Saviour, Surrey	XXXII	—
les, British Home for	Clapham	XXXVI	—
Royal Hospital for	Wandsworth.....	XXXVII	1
Infirmary	Lambeth	XXXV	5
litan Convalescent Institution	Kingston	XXXVIII	—
mic, Royal South London	St. George the Martyr	XXXIV	2
n House for Lunatics	Camberwell	XLI	2
e's Infirmary	Rotherhithe	XLIII	—
our's Infirmary	Newington	XLII	—
nas's Hospital	Lambeth	XXXV	2
sease, Hospital for	St. Saviour, Christchurch	XXXIII	—
ox Hospital, Old Kent Road	Deptford	XL	—
ll Fever.....	Lambeth	XXXV	3
Small Pox.....	"	XXXV	4
orth and Clapham Infirmary	Battersea	XXXVIA	—
Asylum for Lunatics	Wandsworth.....	XXXVII	2
and Children, Hospital for	Lewisham	XXXIX	—
"	Lambeth	XXXV	1
ch Infirmary.....	Plumstead.....	XLV	—

C Contd.—Index to Map. List of Metropolitan Hospitals in the EASTERN DISTRICT.

Hospital.	Parish.	Number of Parish on the Map.	Number of Hospital on the Map.
Home for Lunatics.....	Bethnal Green	XXVII	2
Disease, City of London Hospital for....	"	XXVII	1
n, North-Eastern Hospital for	Shoreditch.....	XXVI	1
London Infirmary	St. Leonard, Bromley	XXX	3
ndon Hospital	Shadwell	XXIX	—
Hall for Lunatics	Bow	XXX	—
House for Lunatics.....	Shoreditch	XXVI	2
Hospital	Whitechapel	XXVIII	—
olitan Free Hospital.....	Spitalfields	XXV	—
nd Old Town Infirmary	Mile End Old Town	—	—
and Stepney Sick Asylum	St. Leonard, Bromley	XXX	2
Hospital for Accidents.....	"	XXX	1
erge-in-the-East Infirmary	St. George-in-the-East.....	XXVIII A	—
itch Infirmary	Shoreditch.....	XXVI	3
chapel Infirmary.....	Whitechapel	XXVIII	2

TABLE C *Contd.*—Index to Map. List of Metropolitan Hospitals in the NORTHERN DISTRICT

Hospital.	Parish.	Number of Parish on the Map.	Number of Hospitals in the Map.
Cancer, St. Saviour's Hospital for	St. Pancras	V	1
Consumption Hospital, North London	Hampstead	XI	1
Epilepsy, Hospital for	St. Marylebone	X	8
Eye Hospital, Western	"	X	1
Fever Hospital, Hackney	Hackney	XIV	2
German Hospital	"	XIV	1
Great Northern Hospital	Islington	XIII	1
Hackney Infirmary	Hackney	XIV	4
Holborn Infirmary	Islington	XIII	5
Invalid Asylum, Stoke Newington	Stoke Newington	XV	—
Islington Infirmary	Islington	XIII	6
London Fever Hospital	"	XIII	2
Lying-in Hospital, Queen Charlotte's	St. Marylebone	X	5
" St. Saviour's	Islington	XIII	3
Middlesex Hospital, the	St. Marylebone	X	2
Ophthalmic Hospital, Western	"	X	9
Orthopædic Hospital, National	"	X	3
Royal Free Hospital	St. Pancras	XII	3
Samaritan Hospital, Lower Seymour Street, W.	St. Marylebone	X	7
Sick Asylum, Central London, Cleveland Street	St. Pancras	XII	7
" Highgate, N.	"	XII	5
Small Pox Vaccination Hospital, Upper Holloway	Islington	XIII	4
Small Pox Hospital, Hackney	Hackney	XIV	3
" Hampstead	St. Pancras	XI	2
Stone, St. Peter's Hospital for	St. Marylebone	X	6
Temperance Hospital, London, Hampstead Road	St. Pancras	XII	2
Throat Hospital, Central London	"	XII	1
University College Hospital	"	XII	4
Women, New Hospital for	St. Marylebone	X	4

Proceedings on the 18th November, 1890.

SIR RAWSON RAWSON in proposing a vote of thanks to the President for his inaugural address, said they would all agree that Dr. Mouat's modest repudiation of his qualification for the office he now held as President of the Society, was, to say the least, untenable. His experience as a public servant through a long career, had specially qualified him for that office. In the public service of India his energy, his independence, and his skill had contributed largely to the success of the introduction of reforms both in their educational institutions and also in their prisons. His (Sir Rawson Rawson's) experience of Dr. Mouat, extending as it did over some thirty or forty years, showed that wherever he could be of use to his fellow men and to society, he was ready to raise his voice, to devote his time, and to use his best exertions in their cause. No doubt the result would be the same in their more limited Society, and the Council already had sufficient proof of the advantage of Dr. Mouat's presidency in conducting their operations. The Society had seldom listened to so useful and so pregnant an address as that which had just been delivered, and they would have the advantage of hearing a few words from one specially qualified to speak upon the suggestions made with regard to hospitals and the treatment of the sick poor—he would not call them paupers—those who whilst they had health and strength were not poor, and would be indignant if so called, but who when deprived of the power of working for themselves and their families became most deserving of sympathy and support. He hoped that the suggestions contained in the address would not fall to the ground, but would form a valuable and profitable addition to the discussion now rife upon the question of the organisation of medical relief for the vast population confined within the narrow bounds of the metropolis. It was not an easy question to discuss. They had not a *tabula rasa*: they found existing institutions of the highest value with noble traditions, possessing, and justly so, the sympathy of the population of London, and therefore they were not likely, as had been said, to act hostilely to them. The object was to increase the utility of those institutions by combining them with other factors of usefulness which had risen up since they were originally constituted, and he hoped that the inquiry now proceeding in Parliament, and the interest now felt generally upon this question, aided by the suggestions of their President, would have a practical and valuable result. Thanks were due to Dr. Mouat specially for those suggestions, and generally for the very interesting address which he had delivered.

Lord THRING said it was with the greatest possible pleasure that he rose to second the vote of thanks to their President. It must not however be for one moment imagined that he was entitled to speak with authority on any of the subjects contained in the

address. He was there as a learner only, this being the first time he had attended one of their meetings. He had been struck with amazement at the great work the Society had been performing, and the wide ground that it traversed. He would not follow the President into subjects on which he (Lord Thring) had not one-tenth part of his knowledge, but he might say a few words on two subjects as to which he had learnt something whilst sitting on two committees of the Upper House. One was the subject of strikes, and the other the question of hospitals. With respect to strikes, he was happy to say they might now be satisfied that their path was no longer marked with blood and outrage, but it often was dogged by penury and want. He did not for a moment depreciate the great value of trades' unions—they had been instrumental in working great benefit to labourers and artizans—but they were making a fresh departure which he thought had not sufficiently attracted notice. The conflict of the trades' unions now was in a great measure a conflict between skilled and unskilled labour. The trades' unionist, without saying it at all in any offensive term, was the aristocrat of labour. What he wanted was that every worker should be a complete workman, able to perform every part of the labour that he was called upon to carry out. For example, he would wish that a skilled carpenter should always be employed in making the whole of a cabinet, not that one man should make the legs and another the top; that in the boot trade and the tailoring trade each man should be able to do the whole work, from the cutting out to the completion. What was the effect of this? It was proved to demonstration that if they employed a skilled labourer in doing work which did not require skilled labour, they were employing an expensive instead of an inexpensive workman, and that he believed to be the real battle that was going on in the labour market. All he would say of it was this, if it be that everybody was to be a skilled workman, what was to become of the poor shivering woman and her starving child, if she was deprived of the opportunity of earning her miserable wage by making it a necessary incident that every workman should be, though doing unskilled work, a skilled workman? In that case they would turn out thousands and thousands to starvation. He believed that to be the great problem, and he hoped the Statistical Society would apply its great resources and experience in the endeavour to solve that problem. They were asked to put a stop to domestic labour altogether, but in his opinion that would be to create a tyranny such as ought not to be tolerated in this or any other nation. With regard to hospitals, he had been sitting on the committee of the House of Lords on hospitals, and had paid as much attention to that committee as he was able to do. The President had said that many people obtained the benefit of hospitals who were not entitled to that benefit. He (Lord Thring) had a very strong opinion upon that point, and argued it out with many of the witnesses before the committee. They were told it was only the very poor who required the assistance of hospitals. He should be glad to know what was meant by the "very poor." As the son of a country clergyman, he was associated in early life with the hard working

and very often most necessitous children of professional men. Take the case of a curate with ten children, or the dissenting minister with his 100*l.* or 150*l.* a year, and a large family. One of these might require an operation, for which if performed at home a doctor might justly charge a very high fee—what was the curate's son to do in such a case; what was the starving lawyer's son to do? He must either die or be compelled to go as a pauper into a hospital, and accept the entire benevolence of that hospital. He would repeat, although it might not be admitted by all, that there was no greater object of charity in this world than the children of the poorer professional classes; but it was not right to submit them to the degradation of accepting complete charity, when though unable to pay a high fee, they were willing to pay a portion of the expense. There was no reason whatever why that class of persons should not be admitted into hospitals on payment of the sum requisite for their maintenance, and such a proceeding would be the truest and the most perfect charity. They were also told on that committee that of all the diseases affecting humanity, infectious diseases were of course the most dangerous to the public, and the most to be cared for. What was the fact? Why, that really and truly infectious diseases were not admitted as a rule into the general hospitals. What was required was, that every union in the country should be compelled to provide an infectious hospital, partly paying and partly free, to which the rich should be able to go when attacked with infectious diseases, or to send those dependent upon them. One fact brought under the notice of the committee was, that infectious diseases really and truly had less accommodation provided for them than any other set of diseases, although they required more extensive accommodation, nursing, and attention than any other. He hoped that this matter would be kept constantly before the public, of the necessity of compelling local authorities, either unions or counties, to provide hospitals for the reception of infectious cases, and that as a means of partly paying the expenses of those hospitals, wards should be provided to which those should resort who were both able and willing to pay. He entirely agreed with what had been said as to the unequal distribution of hospitals in the metropolis in proportion to the population, and the desirability of considering that question in all future arrangements. It was not probable that the great schools of medicine would be willing to change their localities, but in order to alleviate the very great mischief to which the President referred, of patients being discharged before their cure was complete, in order to make room for others, he advocated the establishment of convalescent hospitals in suitable situations. These would relieve the existing hospitals, and also afford a remedy for the misery which must result from sending a patient but half cured back to a squalid home. He had no doubt that the creation of a central body having a certain degree of control over all the hospitals, would be a source of the greatest possible benefit that could be conferred on the metropolis. Though he should not be inclined to say there was much abuse in the hospitals, there was no doubt considerable mismanagement, and

many things which would be amended if there was a central body of control. With regard to the question of out-patients, he was not qualified to give an opinion. They were told on the one hand, it was essential to the school of medicine that the out-patient system should be continued, and on the other hand that it did not do justice to the patient, that it dried up all the provident societies in the neighbourhood, and to a great extent pauperised the people. He should not have thought himself that many of the deserving poor were excluded from hospitals where there was room by delay, and the out-patient system seemed to be worked extremely well in this way, that if a patient required in-door relief he was taken in as a matter of course, if there was room. With respect to the general question of poor law relief, it was difficult to give any opinion, and he did not pretend to do so. He had been immensely struck by some evidence given before the Poor Law Committee by the Charity Organisation Society, in which they pointed out that where a charity organisation worked hand in hand with the poor law, the effects produced were most extraordinary. They led to the separation almost by a sort of automatic process of the deserving from the undeserving poor, leaving the undeserving poor to the somewhat hard mercies of the workhouse, but dealing with the deserving poor by charity in a way and at a smallness of cost, at which he must confess he was greatly surprised. He hoped that their efforts would be directed to carrying into effect in country parishes this union between charity and the poor law, taking care that a society should be formed to discriminate between the deserving and undeserving poor, though that was not always an easy task.

The resolution was unanimously agreed to.

The President expressed his thanks for the vote, and the Society adjourned.

*An EXAMINATION of the COAL and IRON PRODUCTION of the PRINCIPAL
COAL and IRON PRODUCING COUNTRIES of the WORLD, with
reference to the ENGLISH COAL QUESTION.*

By GEORGE G. CHISHOLM, ESQ., M.A., B.Sc., F.R.G.S.

[Read before the Royal Statistical Society, 17th June, 1890.
The President, DR. T. GRAHAM BALFOUR, F.R.S., in the Chair.]

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I OWE an apology to the Society for proposing to read a paper on a subject which has been so recently treated before the members, with great ability and fulness of detail, by Mr. Price-Williams. A sufficient apology will, I hope, be found in the vital importance and the vastness and complexity of the subject. The subject is a momentous one, not merely to the people of the United Kingdom, but to the inhabitants of a large part of the world. The interests of different countries are now so intimately bound up with one another, that one country cannot suffer alone. For that reason the subject is one that cannot be too often or too earnestly pressed upon the attention of thinking men, and especially of the people of England. Moreover, the complex nature of the subject allows of its being treated, or rather demands that it should be treated under different aspects, if it is to be treated fully. In the present paper, therefore, I take up the subject from a different point of view from that in which it was dealt with by Mr. Price-Williams, and I am compelled to leave unconsidered other aspects of the question which might be examined with interest and profit.

Amount of Coal Produced in different Countries.

My endeavour has been to see whether any light can be thrown upon the English Coal Question by a study of the coal production, including what affects the amount of the coal production of other countries. With this view I have first drawn up, in Table I, a statement, in thousands of tons, of the annual coal production of the chief coal producing countries of the world. The table contains all the figures that have been found accessible to me as far back as 1850. In the case of the United Kingdom the table begins with the year 1854, the first year for which we have tolerably trustworthy returns of the amount of coal produced in the country. The figures for the first ten years in this column are

all increased by 2 million tons as compared with the figures given in the official publications. This difference seems, and indeed is somewhat arbitrary, and I must state my reason for making it. In the "Mineral Statistics of the United Kingdom for 1864," it is stated that owing to a misapprehension as to the amount of the unit on which the calculations were based, the returns from South Staffordshire were too low in previous years. In consequence of this amended returns of the total amount of coal produced in the United Kingdom are given for the three previous years, these corrected figures being in each case just 2 million tons in excess of the original ones. It is not stated, however, that the correction should stop at 1861, and I have ventured to carry it backwards to the beginning; but I should mention that if the amount of the correction bore always the same proportion to the South Staffordshire production, then for the first three years there ought to be an addition of about 3 million instead of 2 million tons.

Rate of Increase of Coal Production in different Countries.

Table III shows for the same countries as are enumerated in Table I, the average geometrical rate of increase per cent. per annum for different periods. Seeing that, in consequence of the fluctuations in the amount of production from year to year, considerable differences in the calculated rate of increase might result from taking contiguous pairs of years representing the same length of time (1871-81 instead of 1870-80, for example). I have endeavoured to get rid of this element of uncertainty to some extent by the following method: Wherever the figures at my disposal allowed, instead of taking individual years I have taken the mean of three successive years, and reckoned this mean as belonging to the middle year.¹ Thus, unless otherwise stated in the notes to the table, the rate of increase per cent. for the period 1870-80, for example, is the calculated rate for ten years from the mean of the three years 1869-71 to the mean of the three years 1879-81. The chief case in which I have not been able to adopt this method is that of the United States previous to the year 1881. Before that date the only official returns accessible to me are those for the census years of that country. As the coal production of the United States, however, seems to have been for the most part continuously progressive, the result is in this case probably less misleading than it would have been in the case of some other countries.

¹ In the text and the notes to the tables, an average obtained in this way is referred to as for "mean" or "mn. 1870," "mean 1880," &c., the middle year being named, and when a particular year is intended the word "year" is put before the date.

The facts exhibited in this table are noteworthy in several respects. The figures stating the rate of increase for periods of five years or less are too fluctuating for us to be able to draw any general conclusion from them, even a provisional and tentative one. Those for longer periods are more suggestive, and make us wish that we had been able to extend such comparative calculations over a longer range of time. Taking the figures as we find them, however, we notice, first, that in all the chief coal producing countries of the world, England, the United States, Germany, France, Belgium, there has been a tendency downwards in the geometrical rate of increase; secondly, that this downward tendency has been most rapid in the European members of this group; thirdly, that in the latest period the rate of increase in the United Kingdom has been the least of all, except the Belgian; and fourthly, that the United States and Germany, the two countries that rank next after the United Kingdom in the total amount of coal production, are those which have maintained the highest rate of increase among the five. In the case of the United States it is highly noteworthy that the rate of increase during all the three periods has been nearly uniform. If we leave out of account the small fields of Pennsylvania anthracite, which, though having an aggregate area of only 470 square miles, a quite insignificant fraction of the total area of the coal fields of the United States, produced during the five years 1884-88 nearly 33 per cent. of the total amount, and rather more than 46 per cent. of the total value of the coal produced in the country, then we notice that the tendency of the rate of increase of coal production in the rest of the United States was rather upwards than downwards in the last period as compared with the previous one—9·39 per cent. per annum against 9·30. I have made also a separate calculation of the rate of increase for the last period in the United States for the aggregate production of coal and natural gas, reckoning the natural gas as equal to the same amount of coal as its value represents on the average of the coal production. Calculated in this way we find that the rate of increase in the last period, 8·75 per cent. per annum, has been higher than in either of the two preceding periods.

If the same rates of increase as have been found for the period 1880-87 in England, Germany, and the United States were continued in the future indefinitely, the total amount of the production in the United States and Germany would in no long time overtake that of the United Kingdom. On the assumption just made, the rate at which the coal production of the United States and Germany would gain upon that of the United Kingdom, is shown in the accompanying diagram and in the following table:—

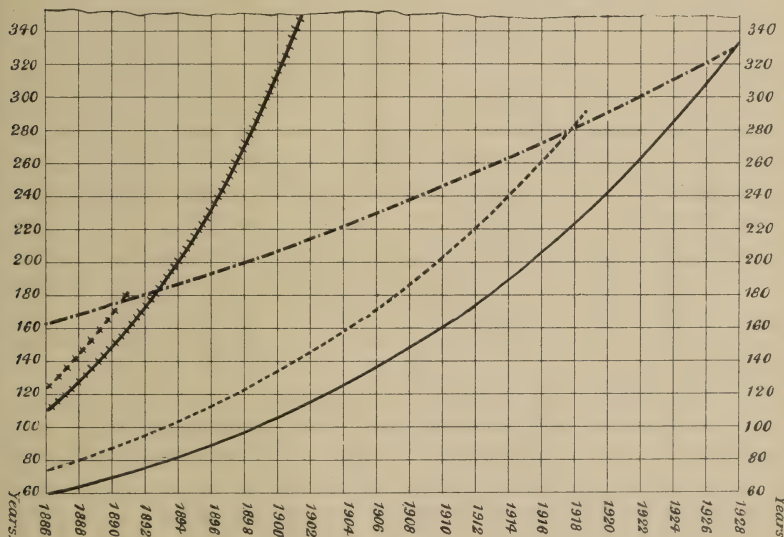
DIAGRAM SHOWING THE RATE AT WHICH THE COAL PRODUCTION OF THE UNITED STATES AND GERMANY WILL OVERTAKE THAT OF THE UNITED KINGDOM, ON THE VERY IMPROBABLE ASSUMPTION THAT THE AVERAGE RATE OF INCREASE IN THE AMOUNT OF PRODUCTION BETWEEN THE MEAN OF THE THREE YEARS 1879-81, AND THE MEAN OF THE THREE YEARS 1886-88, WILL BE MAINTAINED FOR ALL THREE COUNTRIES FOR AN INDEFINITE PERIOD.

REFERENCES.

- · — · — UNITED KINGDOM COAL PRODUCTION
- +++++ UNITED STATES COAL (INCLUDING ANTHRACITE) PRODUCTION
- + + + + + " " COAL AND NATURAL GAS PRODUCTION (NATURAL GAS BEING RECKONED AS EQUIVALENT TO THE AMOUNT OF COAL TO WHICH IT CORRESPONDS IN VALUE)
- GERMANY, COAL PRODUCTION.
- " COAL AND LIGNITE PRODUCTION

IONS OF TONS.

MILLIONS OF TONS.



Amount of Coal Produced in Thousands of Tons.

Mean Year.	United Kingdom.	United States.	Germany.
1893.....	180,585	179,175	78,250
'94.....	183,659	192,507	81,528
1928.....	326,034	2,209,090	329,114
Coal and natural gas			
1891.....	174,590	177,230	—
Coal and lignite			
1919.....	280,082	1,157,940	284,216

So that in four years from 1887 the aggregate production of coal and natural gas in the United States would be in excess of the coal production of England; in six years the production of coal alone would be very nearly equal to, and in seven years exceed, that of England; in forty-one years the English coal production would be the lowest of the three, and that of the United States would be nearly seven times that of England or Germany. The aggregate of coal and lignite production in Germany being reckoned, the overtaking of England by Germany would be anticipated by nine years.

I do not wish it to be inferred that these results are to be expected. So far as the figures in Table III warrant any conclusion at all the conclusion is different. What these figures chiefly bring out is the uncertainty in the rate of progress from period to period. Since the table was calculated I have been able to procure the figures for the coal production of the United Kingdom and Germany for 1889. If then we take the interval between the mean of the three years 1879-81 and 1887-89 as the basis of the calculation, we find that the date at which the coal production of the United Kingdom would be overtaken by that of Germany would be postponed by four years. In 1932 the coal production of the United Kingdom would amount to 402,370,000 tons, that of Germany to 409,370,000 tons. This is mentioned as an additional example of the uncertainty of such computations. Still, the table above given is of some use. Its principal use is to suggest the necessity for further inquiry, and to indicate to some extent the direction in which inquiry should be made. Looking to the importance of the aggregate production of the United States and Germany, and the present high rate of increase of that production, one would naturally consider that, with reference to the English coal question, one of the most important subjects of examination is whether there are any causes in operation likely to maintain the present respective rates of increase in the three countries, or any likely to lead to

further changes in the rate of increase in the direction already followed in the three periods for which the rate is given in Table III.

To this question of course no definite answer can be given, but we may note some facts that have a bearing on the answer. First, the position of the coalfields and the circumstances attending their working in the three countries are to be considered. In Great Britain most of the coalfields have been worked for many generations. All the most important coalfields have been for many years the seats of a dense population, amongst which there has been every inducement to raise the production to the highest attainable pitch. The coalfields most favourably situated and most easily worked have generally been worked longest. Professor Marshall, in his treatment of the coal question, remarks that the British coalfields that showed an abnormal increase between 1855 and 1875 were entirely inland.² As the coalfields of the British Isles are grouped by Mr. Price-Williams in his paper read before this Society,³ only three, those of Yorkshire, Nottinghamshire, and South Wales, showed an advance in the rate of increase of production in the second of the two periods (1854-65 and 1866-87) into which he divides the production. The Nottinghamshire field was that which showed the greatest relative advance: from 2.75 per cent. per annum, to 7.69 per cent.; against 2.33 to 3.54 in the case of Yorkshire, 3.21 to 3.57 in the case of South Wales. But the Nottinghamshire field produces the smallest amount of the three, in 1888 only about one-thirtieth of the total production of the United Kingdom. Moreover it is the least favourably situated of the three, and produces coal of the smallest average value.

The German coalfields are in a similar position to those of England in so far as they have long been the seats of a dense and active population. It is otherwise, however, with the coalfields of the United States. The small coalfields in which during the last period the rate of increase of production showed a tendency downwards, are those in which the production has long been stimulated by the high value of the coal which they yield, and by their easy accessibility from the most populous regions and the greatest manufacturing towns of the country. The coalfields which in the aggregate showed an upward tendency in the rate of increase of production are spread over immense areas, in which the population is still, compared with Europe, sparse, but is steadily and rapidly increasing from other causes than the existence of coal. If we consider only these circumstances, therefore, we need not be sur-

² "Coal: its History and Uses." By Professors Green, Miall, Thorpe, Rücker, and Marshall, p. 341.

³ *Journal of the Royal Statistical Society*, vol. lii, pp. 34—37, Table N.

prised if in the years immediately following the rate of increase in the production of coal in Great Britain and Germany goes on decreasing, while that of the United States increases, or remains steady, in which case the amount of the coal production of the United States would exceed the British even at an earlier date than that indicated above.

Employment of Coal in the Iron Industry.

But there are many other circumstances to consider in endeavouring to answer the question above proposed. The examination on which we have entered can be pursued more closely and profitably. All who have previously investigated the subject dealt with in this paper, have sought for light upon it by inquiring into the nature and causes of the demand for coal. Official returns enable us in some cases to state exactly or approximately the ratio of the coal disposed of in certain ways to the total production of the year. If we suppose the coal used in the smelting of iron ore in 1888 to have belonged wholly to the coal produced in that year, then the coal devoted to that purpose alone was 9.49 per cent. of the whole production, practically the same proportion as was found by Mr. Price-Williams for the previous year.⁴ In 1887 the amount of coal used in the iron and steel manufacture generally, including both earlier and later operations, was equal to 16.46 of the total production, or 20.1 per cent. of the amount of coal retained for home consumption. Compared with earlier years this statement is in one respect highly satisfactory with reference to the coal question. A comparison with the year 1869, for example, will serve to show what important economies have been effected in the iron industry since then. In 1888 nearly 47 per cent. more pig iron was made than in 1869, but with rather more than 1.3 per cent. less fuel.⁵ In 1887 nearly the same amount of pig iron was converted into various forms of manufactured iron, but with rather more than 28 per cent. less fuel. In 1869 the total amount of coal used in the iron industry was 33 per cent. of the amount retained for home consumption, in round numbers one-third of the whole as against one-fifth in 1887, and this difference is mainly to be ascribed to the economy of fuel just illustrated. The attention of the Society was drawn to this important economy by Mr. Price-Williams,⁶ and I refer to it again only in order to point out one gratifying feature in connection with it. Those who have read

⁴ *Journal of the Royal Statistical Society*, vol. lii, p. 38.

⁵ In 1888 the average amount of coal used in producing 1 ton of pig iron was 2.02 tons; in the United States the corresponding consumption for 1887 was estimated at 1.95 ton.—(“Mineral Resources of the United States for 1887,” p. 30.)

⁶ *Ibid.*, pp. 14 and 15.

Jevons on the coal question, will remember the chapter in which he dwells on the futility of the hope that the evils of coal exhaustion are likely to be delayed by economies of fuel in manufacturing industry or in production generally.⁷ The subject is handled in Mr. Jevons's accustomed manner, with remarkable breadth of view, extent of knowledge, penetration, and literary skill, so that the chapter is too striking to be forgotten. Mr. Jevons maintains that all these economies lead only to such an increase in the consumption of the manufactured articles as to bring about on the whole a rise instead of a diminution of the demand for coal. Mr. Jevons writes almost convincingly, and it is very gratifying to observe that as a matter of fact the economies effected in iron and steel production in recent years have not thus far led to so great an increase in the demand for iron and steel as to nullify the economy of coal in the aggregate.

This may be put down as one cause of the diminished rate of increase in the production of coal in the United Kingdom in the last of the periods for which figures are given in Table III. But seeing that some other countries still maintain a higher rate of increase than England, it is advisable to see whether any other causes can be discovered. The large share which the iron industry has in the demand for coal, suggests our searching for them in connection with it, and accordingly two tables relating to the iron industry have been drawn up similar to those compiled in connection with coal. The one, Table IV, gives the data as to the amount of production of pig iron and iron ore in successive years; the other, Table IX, states the average rate of increase per annum for certain periods. Table IX has been calculated in the same way as Table III, that is, the years which mark the limits of the periods are mostly the means of three successive years. The exceptions are noted at the foot of the table.

Rate of Increase of Production of Iron and Iron Ore in different Countries compared.

The facts brought out by this table to which I would first direct attention are these: First, in the English production of pig iron there is a regular diminution in the rate of increase from period to period, as in the case of coal, but even more rapid, and the last period exhibits a much lower rate of increase than any other important iron producing country except France, which shows a decrease; second, on the other hand, of the two great rivals of England in coal production, the United States has maintained a fairly constant rate of increase in the production of pig iron from period to period, and Germany shows in the last period

⁷ "The Coal Question," chap. vi.

as compared with the first, a diminution of rate much smaller than in England; third, all the principal iron-producing countries except England, France, and Sweden, showed a rise in the rate of increase in the third period as compared with the second, Germany, Austria, and Belgium, a very substantial rise; fourth, if we compare the rate of increase in the individual countries with the rate of increase of the estimated pig iron production of the whole world for the nearest corresponding periods, we find that in the period 1860-70, Belgium, Germany, the United Kingdom, and the United States showed a higher rate than the aggregate rate for the world, in the period 1870-80, only the United States, and France and Germany taken together, in the third period all the chief iron-producing countries except, England, France, Russia, and Sweden. All these circumstances seem to combine in indicating that England is tending to take a relatively lower place in the iron production of the world. The same result is brought out by Table VI, which shows the percentage of the total production of iron of the five chief iron-producing countries of the world belonging to each of the five countries for four successive periods.

Iron Ore Production in the United Kingdom and Germany.

But the facts to which we have just drawn attention as revealed by Table IX, are not all the facts of importance that the table brings into prominence. The production of iron ore and steel so far as exhibited in that table is also worthy of consideration. As regards *iron ore*⁸ it may be noted that the United Kingdom exhibits a diminution in its rate of production even more rapid than in the case of pig iron. In the last period there is even a decrease. In Germany, on the other hand, an increasing production of ore is maintained; in the last period, that which shows an advance in the rate of increase of pig iron production, there is also a considerable rise in the rate of increase of the production of iron ore. In making this comparison, however, one important circumstance has to be borne in mind. In the case of Germany, in order that the result may not be confused by the effect of the transference of the important iron ore yielding province of Alsace-Lorraine from France to Germany in 1871, the mean of the years 1872-74, instead of the years 1869-71, has been taken as the initial year of the

⁸ For the United States there are no complete returns of the production of iron ore, but from the estimates given in the "Mineral Resources of the United States" for 1887, it would appear that the United States production of iron from native ore already exceeds that of the United Kingdom. In 1887 the amount of iron produced from native ore in the United States was about 5,733 thousand tons avoirdupois (compare pp. 18 and 32 in that volume); in 1888, when the production of native ore in the United Kingdom was a million and a half tons more than in 1887, the estimated amount of pig iron produced from that ore was only 5,131 thousand tons.

period. Now these are the very years in which the production of pig iron in Germany was suddenly and abnormally increased, so that the rate of increase between the mean of these years and the mean of 1879-81 is correspondingly lowered. For that reason, in order to make the comparison fairer, the rate of increase between the mean of 1872-74 and that of 1879-81 has also been calculated for the United Kingdom, the three years, 1872-74, having been there also years of exceptionally high production, though not the highest up to that date.

The relative importance of native and foreign ore in the United Kingdom and Germany is also brought out by Table VII, which shows the ratio of the amount of foreign ore to the entire consumption of ore in both countries in the United Kingdom from 1868, in Germany from 1872. It will be observed that the dependence of England on foreign ore is increasing much more rapidly, and is now much greater than in Germany, although in the years 1875-77, it was less. The figures showing the percentage of foreign ore used in England, are from Mr. Jeans's Reports to the Members of the Iron Trade Association, and do not take into account the considerable quantities of "purple ore" ultimately used in iron smelting, although imported primarily for other purposes. This growing dependence of England on foreign ores can hardly be regarded as favourable to the more rapid growth of the English iron industry in the future, though it is true, and to be borne in mind that when foreign ores are required at all, England is in a much more favourable position than any other country for getting them.

Steel Production.

As regards *steel production* it is necessary to point out, as is done in the notes to the table (Table IX), that the steel whose production is compared is not the same in all cases. It is, however, in all cases the bulk of the steel produced in each country, and the rate of increase in each country always refers to the same class of products for the same period. Under this head we may note first the high rate of increase maintained in the three chief steel producing countries, the United Kingdom, the United States, and Germany, the only countries for which the table offers figures for comparison with respect to this matter. It will be noticed, however, that while the rate of growth in all three is high, it is lowest in the United Kingdom and highest in Germany. Table V shows that already the total production of steel in the United States has exceeded that of the United Kingdom in two years. This is only part of the rapid development of the whole iron industry of that country, and to be explained by the rapid growth of the internal demand for steel.

The difference between the rate of expansion in the production of steel in the United Kingdom and Germany does not appear to be great, still it results in this, that whereas on the average of the three years 1879-81 the amount of Bessemer and open hearth steel made in Germany was rather less than half (49·6 per cent.) of that made in the United Kingdom; on the average of the three years 1886-88, the German proportion was equal to nearly 58 per cent. A partial explanation of this more rapid growth in Germany may perhaps be found in the history of the basic process of steel making. The period referred to is precisely that in which this process has been developed. Now this process is one that enables inferior ores to be used in steel making on a large scale. As England is richer than Germany in the better kind of ore, which could formerly alone be used in steel making, the English iron industry was then favoured by the growing demand for steel. The basic process enabled Germany and other continental countries to turn their own ores to better account. England was deprived of the advantage she formerly held. The basic process was applied on the continent very rapidly and extensively. In the ten years 1880-89, inclusive, out of 10,523,000 tons of basic steel produced in Europe, 8,385,000 tons, or 79·68 per cent., were produced in the mainland, only 2,138,000 tons, or 20·32 per cent. in England. In this fact we may probably see a considerable part of the explanation of the great advance in the rate of increase of production of German iron ore in 1880-87 as compared with 1873-80.⁹ In the United States the basic process has not yet been applied to any great extent. Various causes are assigned for this. Among other things litigation is said to have retarded its introduction. But it is stated that there are several parts of the United States well suited to carry on the process, for which a great future is held out there. If this is so, the growth of the American iron industry will be further promoted, and the hold which England still retains on the iron market of the United States will be further weakened (except perhaps as regards tin plate).

With reference to the English coal question all this implies that the present development of the iron industry does not give any promise of a return to the higher rate of increase of coal production in England in the periods previous to 1880-88 being aided by the more rapid growth of the iron industry in England. Of course it must be remembered that the more rapid growth of the iron industry on the continent of Europe is partly effected by a drain on the English coalfields. This very growth in fact is one of the circumstances that contribute to account for the high rate of

⁹ See also *Journal of the Royal Statistical Society*, vol. lli, p. 87, at the bottom.

increase maintained in the export of English coal, notwithstanding the diminution in the rate of increase of production (see Table III) Still, this partial transference of the iron industry to the continent of Europe cannot fail to stimulate the production of coal where coal is to be found. To this stimulation we shall probably be safe in attributing some part of the higher rate of increase of coal production maintained in Germany than in England. So far as the diminished rate of growth of the iron industry in England is attributable to the increased rate of progress of that of the United States, the demands on the English coalfields are reduced, or rather kept down, for the iron industry of the United States is in no way dependent on English coal.

There is still one more point, in Table IX, that deserves some examination. In the three periods for which figures are given the world's production of pig iron exhibits a decline in the rate of increase in the second and third as compared with the first. The first period, however, is not so fairly comparable with the second and third as these two are with one another. The uniformity of rate in these last two periods is remarkable. It suggests the inquiry whether this rate is likely to be continued in subsequent periods. We must bear in mind that the third period is precisely that in which the economies in the production of iron have been most marked. According to the doctrine of all economists, this lower cost of production ought to have had a stimulating effect on the consumption of iron. There can hardly be a doubt that in some directions there has been an effect of this nature. Nevertheless we find, on the whole, that the rate of increase in the production is practically stationary. From that alone one might not unfairly conclude that unless further economies were to furnish an additional stimulus to the consumption of iron, there is at least no reason to expect any rise in the rate of production in the future.

Progress of Railway Construction throughout the World.

But we have the means of inquiring into this matter a little more narrowly. We have statistics that show the rate of progress of railway construction. Now when we consider all the various demands for iron involved by the extensions of the railway system, iron, not only for rails, but various accessories employed in the laying of rails, now including in many cases sleepers, iron for bridges, for signalling apparatus, steam engines and rolling stock, as well as for other purposes, we see plainly what an important effect the rate of progress under this one head must have on the growth of the demand for iron generally. Two tables have therefore been drawn up, one, Table X, showing the growth of the

railway mileage of the world, and of certain countries, or certain sections of the railway mileage of the world, with the amount of increase for certain periods; the other, Table XI, showing in certain cases the average rate of increase per cent. per annum.

Turning our attention to Table XI, we may notice first the rate of increase recorded for the larger aggregates, the sum total of the railways enumerated in Table XXI of the "Statistical Abstract for "Foreign Countries," No. 15, and the railways of the whole world for two periods, as estimated partly from the "Foreign Abstract," and partly from Neumann-Spallart. We observe in the latter period a tendency downwards indeed in the geometrical rate of increase, but not a very marked one. The striking thing is rather the high geometrical rate of increase that is maintained down to the last. This seems to bear out the contention of Professor Marshall, that it was quite certain that the railway mileage of the world in 1875 no more adequately represented the world's¹⁰ wants than that of 1850. It is important to inquire, however, how this progress is brought about. With a view to this inquiry we may see what has been the history of railway construction in some typical countries in which the process has been going on for the longest period. Table X gives a few such examples. For the purpose for which the table is drawn up it would have been of advantage to show the rate of progress of single railway lines, for obviously a double line railway of 100 miles consumes about twice as much iron as a single line railway of the same length. This did not prove in every case to be practicable. In the case of the United Kingdom, however, we have the means of making an approach to completeness in this respect. The last railway returns show the length of single line railways, and railways with two or more lines, in each year from 1854 downwards, with the omission of two or three years.¹¹ One of the columns of Table X, A, shows the increase in quinquennial periods in the railway mileage of the United Kingdom, when the number of miles of railway with two or more lines is doubled and added to the number of miles of single line railways; and another column in the same section of the table exhibits the rate of increase when single and double lines are not discriminated. The result is not very different, so that we may take the result found in other cases as not likely to be so misleading as might otherwise have been supposed. The columns of Table X, relating to the United Kingdom, seem to me highly significant. A simple inspection of the increments from period to period shows that there is no approach to the maintenance of a steady geometrical rate of increase. There is not

¹⁰ "Coal: its History and Uses," p. 330.

¹¹ 1858 and 1859, 1863-70.

even a steady arithmetical progression. And this is in a country in which there is the highest possible inducement to railway construction, in which in some cases $2\frac{1}{2}$ miles of haulage to a railway makes all the difference between profit and loss.¹² Similar facts are brought out by the figures given for other countries in Tables X and XI. In the United States, indeed, though the commencement of railway construction dates from the year 1831, we see from Table XI, that during the last three periods a geometrical rate of increase has been maintained about equal to that for the whole list of countries enumerated in the Foreign Abstract, and for the world generally. But when we take the country by groups of States, and individual States, we find that in the New England States there is no approach to such a rate as is found for the whole country, that in the middle States and southern States the increase is not much more rapid, except in certain periods, but that this slower rate of increase is counterbalanced by the very rapid rate at which the railway system has been extended in certain western and Pacific States. Between 1860 and 1870 the States that showed the greatest increase per cent. were, in order, California, Arkansas, Iowa, Missouri, Texas, Michigan; between 1870 and 1880, Dakota, Colorado, Wyoming, Texas, Arkansas, Utah, Oregon, Minnesota, Nebraska, Michigan, California; between 1880 and 1888, Montana, Washington, Idaho, Dakota, Indian Territory, Arizona, Arkansas, Oregon, Colorado, Nebraska, Kansas. Outside of the United States, among the parts of the world in which the rate of progress in railway construction is about as high as in the world as a whole, are the British Empire generally; in Australia, however, higher than in India; also the Argentine Republic and Uruguay, where the increase has been specially rapid in the last period.

All this no doubt is just what might have been expected. To many, perhaps to most, it will not seem at all surprising. For all that, the obvious significance of the facts referred to may be overlooked. They all seem to me to lead inevitably to the conclusion that the high rate of progress in railway construction hitherto maintained in the world as a whole, is not the permanent law of railway construction, but that it belongs to an entirely new revolutionary and still uncompleted stage of the world's economic condition. The rate has been kept up so far by laying railways in different regions of the world successively. Sooner or later we shall come to a period when the increase in the railway mileage of the world will not approach a steady geometrical rate, perhaps not even a steady arithmetical rate. However great the actual increment year by year may be, however great the demands for renewals of existing

¹² Thorold Rogers: "Economic Interpretation of History," p. 231.

lines, such a diminution in the rate of the additions to the railway mileage of the world can hardly fail to put a pretty decided check to the growth of the demand for iron. At least the circumstances from which any new demand for iron sufficient to make up for the loss of this demand are not at present apparent, and therefore not to be counted on. With reference to the renewal of existing lines, moreover, it is a fact of considerable importance that the now general use of steel in the place of iron for rails must considerably reduce the extent of the demand for metal relatively to the extent of the railway mileage. The economy of coal effected by the improved modern processes of making steel for rails will thus be enhanced by a further economy arising from the greater endurance of the superior material.

At present, however, the demand for iron for new lines of railway seems to be still increasing at a pretty rapid rate. With regard to English iron, however, we must consider that there are certain parts of the world that can hardly be looked upon as belonging to the English market for railway iron (and steel). Among these it will probably be prudent to include for the future the United States, that is to say, the most important region of the world in which the extension of the railway system is increasing at a high rate. We have already seen that that country is steadily acquiring more and more complete command of its own market for iron. In 1887 the export of railroad iron of all sorts from the United Kingdom to the United States was as high as 182,232 tons; in 1889 it had sunk to 18,561 tons. In the latter year the United States had sunk from the second to the seventh place in the list of countries receiving this export. The export of unwrought steel to that country fell in the same two years from 215,654 to 33,799 tons. In order, therefore, to form an estimate of the progress of railway construction in the countries that may be considered as belonging to the British market for railway iron and steel, the United States have been deducted along with certain other countries, and the rate of increase of the mileage for the rest of the world calculated. The result is shown in Table XI,¹³ from which it appears that in the aggregate of these countries the rate has been much the same as in the world generally. We may fairly expect accordingly that any diminution in the rate of growth of the demand for English iron for railways will proceed gradually.

The rate of diminution may nevertheless be accelerated within no very long time. Taking a broad view of the history of coal and iron production within the last half century, we may say that we have been using up our coal supplies with phenomenal rapidity, to exhaust the fertility of the most fertile parts of the world. Rail-

¹³ Compare Table X D, Col. 4.

ways reach out in all directions with their many fingers, groping and grasping wherever there is anything to be got. One new cornfield has been found and occupied after another. But the world has been pretty well rummaged now. It is filling up. The Argentine Republic and Uruguay are succeeding the United States and Australia in being rapidly intersected with a network of railways. But this region has neither the extent nor the climate to hold out the promise of as long a period of railway construction as the United States. In no very long time we may find that the coal question is, after all, in the first instance, a corn question. Railways and steamships have been doing their best in recent years to find new means of supplying us with cheap agricultural produce. If there are no longer any fields to be worked on the same advantageous terms as those which have successively been discovered already, that fact itself may put a check on the growth of the railway system of the world, and hence, indirectly, on the demand for coal. The symbol of this Society, the wheat-sheaf, remains, after all, perhaps the most important factor in the economic development of the world. Since the beginning of the last decade the area under wheat in the United States has remained almost stationary, notwithstanding the immense influx of population. On comparing the average of the ten years 1870-79, with that of the ten years 1879-88 (Table XVI), we find that, with the unimportant exceptions of Rhode Island and Maine, every State and territory of the United States for which there are returns shows a decline, in some cases an important decline, in the yield per acre of "corn" (maize) in the later period. Most of the leading agricultural exports of the United States showed a decline in quantity on the average of the six years 1882-83 to 1887-88, as compared with the average of the preceding five years.¹⁴ These surely are facts not without significance.

Many look to Central Africa and China as new fields for railway construction. Perhaps it is the ultimate destiny of both to be brought under the influence of the same commercial bonds as the rest of the world. With regard to the continuous growth of the demand for iron, however, so far as that is affected by railway construction, the consequence of covering these regions with a railway network, will depend on the rate at which this is accomplished. As to Africa it is impossible to form any forecast. In the case of China we may perhaps take India as a somewhat parallel case. In an old

¹⁴ The commodities of which this is true are wheat, maize, bacon and hams, lard, pork, butter, and cheese; the exceptions are cotton, tobacco, wheat, flour, and fresh and salted beef. The decline in maize, bacon and hams, pork, butter, and cheese, is very large, that in wheat considerable (nearly 3 per cent.), but is probably fully made up for by the advance in flour. The advance in tobacco is very small (less than one-half per cent.)

country like India, with a dense population, the different portions of which have grown up under the necessity of supplying all their chief wants within a narrow area, railway construction proceeds at a slower rate than it does in new countries opened up by railways, or in old countries with special advantages for the development of manufacturing industries on a great scale. In India about 15,250 miles of railway have been laid in about thirty-six years. China proper has about the same area as India and Burma together. If we suppose Chinese railways to be laid at the same rate as in India, then China would have about 850 miles of railway at the end of eight years, 4,850 at the end of eighteen years, 9,500 at the end of twenty-eight years, and 15,250 at the end of thirty-six years. The supposed increment for the last eight years is equal to about 700 miles per annum, or about one-sixteenth of the average annual addition to the railway system of the world in the ten years 1875-85.

Export of Coal from the United Kingdom.

So much with regard to the consumption of coal in the iron industry. We have also definite official returns as to the amount of English coal disposed of by export. In 1888 the quantity exported was equal to about 16.4 per cent. of the production of that year, and the percentage so disposed of has been on the whole a growing one for many years, as is shown by the fact that the export has been increasing, at least since 1860, at a much higher rate than the production (Table III). In the case of the export it will be observed the rate of increase has been very steady during the whole period. Have we any means of estimating whether this rate is likely to be continued in the future? The amount of the export to the United States has for many years been variable and practically stationary;¹⁵ but, on the other hand, there has been a large, and, on the whole, steady increase in the amount of coal exported to France, Holland, Germany, Denmark, and Italy (in recent years very rapid to Italy) Spain, Egypt, and the British East Indies, as well as other countries. There is no reason to expect that this export will not go on increasing at a steady rate, unless perhaps the increased cost of working English coal-fields and exporting English coal imparts a great stimulus to the working of coalfields elsewhere. With regard to the export of coal it may be pointed out, however, that notwithstanding the number of British seaports conveniently situated for exporting coal, the difficulty of providing additional accommodation for shipping to carry away the coal must have a retarding effect on the growth of the export. Mr. Price-Williams has calculated that if the export of coal from Cardiff increased in the twenty-four

¹⁵ See note to Table II.

years subsequent to 1887 at the same rate as in the previous twenty-four years ($7\frac{1}{2}$ per cent. per annum), it would at the end of that time amount to 49 million tons. In twenty-five years accordingly it would amount to upwards of 52 million tons, or a million tons a week. If we assume that 1,000 tons of shipping can carry 1,500 tons of coal, then 666 vessels of 1,000 tons would have to clear every week¹⁶ with coal for foreign and colonial ports, from Cardiff only, in order to carry on this export trade. In 1886 the actual tonnage that cleared with cargoes from Cardiff for foreign and colonial ports was equal to about 80 vessels of 1,000 tons per week. Obviously to provide the additional shipping accommodation requisite for the increased amount of trade would entail such a cost as could not but add to the price of the coal at the place of import, and stimulate coal production elsewhere. Spain, Southern Russia, and the Caucasus would have additional inducements for the working of the coalfields that are known to exist there. New South Wales, whose production and export of coal, though now small, are both growing at a more rapid rate than those of England (Tables I and III), would find it easier to compete with England in the east. Already New South Wales carries on a considerable export trade to India. India herself would probably increase her coal production at a more rapid rate than heretofore. Japan also occasionally sends a cargo of coal to India, and as the coal trade of Nagasaki is growing very rapidly, the cargoes will probably be more numerous in the future. Excellent steam coal is already worked in Tongking and Anam. Several coalfields are known to exist in Borneo, Sumatra, and Java. None of these has yet attained a high rate of production, any more than the coal mines of Labuan, but a very promising coalfield is now on the point of being brought into communication with the sea in Sumatra. The coalfield referred to is the Ombilien coalfield, which lies about 41 miles in a straight line east-north-east of Padang, but in a mountainous district. One subdivision of the field has three thick seams of pure coal, in all nearly 37 feet thick. The quality of the coal is good. At trials made at Padang in 1882 its evaporative power was found to be 88 as against 100 for Cardiff coal. A beginning has been made by the Dutch Government with works for the laying of a railway (105 miles long) over the mountains to this coalfield, and improving the harbour of Brandywine Bay, which would form the outlet for the coal. It is calculated that the coal could be delivered at Brandywine Bay for 15s. 6d. a ton, at the harbour of Batavia for 22s.¹⁷

¹⁶ Equal to 111 per day, exclusive of Sundays, one every $6\frac{1}{2}$ minutes for a twelve hours day.

¹⁷ The coal imported into Ceylon in 1888 was valued on an average at about 33s. a ton. With regard to this coalfield, see a "Report of the Naval Intelligence Department" (No. 128, February, 1887, p. 41).

Consumption of Coal for Steam Power used in Manufactures in the United Kingdom.

On this head we have no definite information. Mr. Price-Williams estimates the percentage of coal so consumed in 1887 at the same amount as that estimated by the coal commissioners for 1869, namely, 23·58, the largest consumption of coal under any head. To treat this subject in the same manner as other topics have been treated in this paper, we should here have to consider whether any indications are to be derived from the recent history of manufactures in the United Kingdom and other countries, as to the probability of expansion of the demand for coal under this head in the future. But this question is too vast for its adequate treatment to be thought of. Only the most cursory and fragmentary consideration of it can be attempted here. Still a few circumstances may be pointed out.

Table XII shows the percentage which the value of some of the chief exports of British and Irish produce has borne to the whole value of such exports at various periods from 1856 downwards. It may be noticed that the leading exports of textile goods, which in the aggregate form by far the most important of British exports, show a decline in the percentage in recent periods as compared with one or more of the earlier periods. One must be careful, however, not to attach undue importance to this fact; that the percentage value of these articles has gone down implies that the percentage value of other articles has gone up, and the percentage value of a good many minor manufactured articles no doubt has gone up. Still the fact just mentioned is not, perhaps, without importance when taken in connection with the fact that the chief articles of export whose percentage value has risen pretty steadily from the first, are coal and machinery, including steam engines. The growth of these exports seems to point to the rise of competing manufacturing industries in the countries for which the exports are destined.

Table XIII, which is constructed on the same principle as Tables III and IX, shows a much slower rate of increase for the net import of raw cotton into the United Kingdom than for that into the other countries named in the table (France, Germany, Italy, and Russia). The rate of progress of the exports of nearly all the textile products of the United Kingdom is also seen to be slow. The rapid development of the export of Indian cotton yarns to the far east, contrasted with the fluctuating and nearly stationary export of British yarns to the same quarter during the same period (Table XIV), is specially noteworthy. We may add here as significant of probable future developments that may con-

tribute to retard the rate of progress of British manufactures, that while the number of cotton spindles in Great Britain increased in the period 1878 to 1889 from 39,527,920¹⁸ to 43,500,000, the number of those of British India increased from 1,453,000 to 2,762,518 between June, 1879, and June, 1889; those of Japan from about 80,000 to 200,000 between 1886 and 1888; those of the southern States of the United States increased from 559,320 to 1,344,576 between 1879-80 and 1888-89. Of course it is always to be borne in mind that the whole of the more rapid growth of certain manufactures in foreign countries is not to be reckoned as implying a saving of English coal; still it is so to some extent, and may tend to become still more so by the stimulation of coal production abroad.

Miscellaneous Heads of Coal Consumption.

The following are, in the order of importance, the remaining heads of coal consumption as enumerated by the Coal Commissioners and Mr. Price-Williams, along with the ratio of the consumption under each head to the total production as estimated by Mr. Price-Williams for the year 1887: domestic consumption, 17.44 per cent.; coal and metal mines consumption, 6.72 per cent.; gas manufacture, 5.87 per cent.; steam navigation, foreign and colonial, 4.24 per cent.; steam navigation coastwise, 4.24 per cent.; railway locomotives and fixed engines, 3.98 per cent. (3.81 per cent. being for locomotives); waterworks and miscellaneous, 1.40 per cent.; tin, copper, lead, and zinc smelting, 0.80 per cent.; army departments, 0.18 per cent. Mr. Price-Williams admits that the estimate for coastal steam navigation is excessive, so that the excess would have to be distributed among the other doubtful estimates. Into these heads of consumption I do not enter, beyond remarking that some of the more important of them, such as domestic consumption, and consumption in gas making, must keep pace with the growth of the population, unless economies are effected in the mode of using coal for these purposes.

General Conclusions from the Facts already considered.

1. Quinquennial periods are too short to afford useful results in inquiries of this kind into the progress of industry.
2. Calculations of the rate of increase for periods longer than five years, such as those whose results are recorded in Tables III and IX, seem to be more instructive, but these tables extend over too short a range of time to warrant any conclusions being drawn as to the future with any degree of confidence.

¹⁸ Not including doubling spindles.

3. Nevertheless the figures given in Table III under the head of rate of increase of coal production, for periods of more than five years, when taken in conjunction with the corresponding figures for iron production in Table IX, and the various considerations adduced with regard to the iron industry in general and British manufactures, seem, so far as they go, to suggest the conclusion that we have no reason to expect, in future periods, a return to the former higher rate of increase, but that a continued decline in the rate is to be regarded as more probable.

4. So far as yet appears, we have no reason to anticipate at any time anything of the nature of a disaster or sudden catastrophe from our continued consumption of coal. English coal, we may feel sure, will never be exhausted. We shall never come to a time when our miners will say, "We need not go down again to seek for coal, there is no more." The change of conditions will probably be a gradual one throughout. First we may expect only the continuation of a process already begun, a gradual contraction in the rate of expansion of the coal production. That may pass insensibly into a stationary state of coal production to be followed by a gradual decline. Such, remarks Professor Marshall,¹⁹ is the actually observed history of the working of individual coal mines. It may be that the modification of the rate of increase or decrease of the amount of coal production will not always be so gradual as it is now, still we may hope that it may be gradual enough to allow of the habits of the people being adapted to the changing conditions.

5. Nevertheless, the fact of the steady rate of increase in the aggregate number of the population of Great Britain, as shown in Table E in the Appendix to Mr. Price-Williams's paper on the coal question,²⁰ taken along with the apparent signs of a declining rate of expansion in some of the chief industries of the country, is one that cannot be regarded with equanimity, and makes it urgently to be desired that the true state of the case should be carefully inquired into, and made as widely known as possible.

Proposed Preventives of the too Rapid Consumption of Coal.

We have already seen incidentally that one of the most important of these is the introduction of various economies in the use of coal for industrial purposes, and we have found reason for believing that, notwithstanding the effect of cheapened production in stimulating consumption, such economies may really result in a saving of coal in the aggregate. In many, perhaps in most cases, the inducement to effect such economies is so obvious to the producer, that no further motive is required to promote their

¹⁹ "Coal: its History and Uses," p. 314.

²⁰ *Journal of the Royal Statistical Society*, vol. lii, pp. 25 and 26.

contrivance and adoption, but if any contrivances for the purpose are known and neglected, there may be good ground for the interference of the legislature.

Legislative interference has been proposed for the prevention of wasteful methods of employing coal for domestic purposes. An immense saving might, it appears, be thereby achieved, and probably no legislation of a less objectionable kind could be proposed with a view to economising our coal supplies, yet it is very doubtful whether any such enactments would be tolerated by the country.

Seeing that the export of coal from the United Kingdom is the cause of one of the most progressive inroads on the British coal supplies, it is natural that the imposition of an export duty on coal should have been suggested and discussed. All, however, who are aware of the enormous importance of the coal trade of this country to its entire commerce, will unite in deprecating any such tax. The importance of this trade has been expounded by Jevons in a manner that cannot be forgotten by those who have read the chapter in which he deals with the subject. But the magnitude of this department of British trade was probably never more strikingly revealed than in the figures published by Sir Rawson Rawson, showing that formerly nearly one-half, recently more than half, of the tonnage that cleared with cargoes in the export trade from British ports, was laden with coal. The fact would be to many, no doubt, as it was to me, a revelation. It was first publicly mentioned, I believe, by Sir Rawson in this Society, but the figures were given in detail in the "Sequel to the Synopsis of the Tariffs and Trade of the British Empire," from which I take the liberty of reproducing the table in a condensed form (Table XV). Any tax imposed on a trade of this magnitude, sufficient in amount to have any serious effect in checking the growth of the export in the manner intended, would obviously inflict a staggering blow on the entire commerce of the country. Few can contend that the infliction of any such blow could be justified by the design of guarding against what is after all a problematical contingency.

But it may now be pointed out that though no tax is likely to be imposed with the view of arresting the progress of this trade, its abnormal growth may be checked by the growing difficulties of the trade itself in another way than that already indicated. As the coal trade favours in many cases the import trade of the country by ensuring to ships a cargo outwards, so the vast import trade of the country favours the coal trade by increasing the chance of a cargo homewards. But Table XV shows that the ratio of the coal shipping of the country to the entire shipping has been rapidly growing. If this ratio continues to increase, the chance of vessels that carry coal outwards obtaining a return cargo

must be considerably reduced, and the British coal trade accordingly will no longer be favoured to the same extent as it now is.

And there is another consideration with reference to the export of coal. The exported coal is employed to a large extent as a means of carrying on manufacturing industries in foreign countries; in other words, it is used to rear and support a manufacturing population abroad. Now, if it is anticipated that disaster or distress may come upon a population dependent on coal through the exhaustion of the coalfields or the increasing difficulty of working the mines, surely it is better that that population should be spread over a wide area instead of being concentrated in one little country. We have no ground for wishing that the responsibility of dealing with such difficulties should be thrown upon ourselves alone.

This reflection will enable us to look upon such successes as foreign countries have achieved in competing against British industries with other eyes than those with which we are apt to regard them. It ought at least to induce us to watch with greater sympathy the efforts of our colonies to establish manufacturing industries among themselves. Such industries have in many cases to contend against great difficulties. Table IV shows how insignificant and even unprogressive is the iron industry of New South Wales, in spite of its wealth in fuel. Yet we cannot believe that the industry there is perpetually doomed to this insignificance. The ores are there as well as the fuel, but the other favourable conditions are not there yet. When the industry does begin to thrive and grow, we at home may greet its rise with a double satisfaction. Any English iron smelter who employs his skill and capital in erecting a blast furnace in New South Wales, and succeeds in making it pay, may have the gratification of reflecting that he has opened a safety valve that helps to relieve the pressure of the growing demands on the coal supplies of the mother country.

I may here add that the circumstance we are now considering is one proof of the wisdom of the policy of the English people in throwing open to all countries alike the commercial advantages of the extension of the British Empire. The extension of that empire, it is generally admitted even by enemies, means the extension of order and justice, and the industry that naturally springs up under the shelter of order and justice. That all nations alike should be permitted to share in the fruits of that industry, so far as they can, on the same footing as the people of the British Isles, is a policy which, I hope, we shall never be tempted to abandon.

I will even venture to go a step further. Without wishing to utter one word against the soundness of the arguments for free

trade from the point of view from which such arguments are adduced, I venture to doubt whether the protective barriers with which some countries have hedged themselves round, and which have certainly acted adversely to the expansion of British manufactures, are altogether a ground for lamentation in this country. If from the time when coal began to be used in mechanical industry, uninterrupted free play had been allowed to the prodigious advantages with which such industries were started in this country, I cannot think that the result at this moment would have been wholly satisfactory to Great Britain. No doubt the manufactures of the United Kingdom would have thriven, the commerce of the country would have expanded, its wealth accumulated, its population multiplied more rapidly than they have done. But suppose that, in consequence of all this rapid development, say one-third of the coal and lignite production of the United States and Germany were added to that of England, suppose, that is, that England, instead of producing 170 to 180 million tons of coal annually, produced 250 million tons, suppose that the population of the United Kingdom since 1854 had increased, say, at the same rate as that of Great Britain between 1811 and 1821, namely, on an average, 1·403 per cent. per annum, instead of 0·895 per cent. per annum, and now amounted in consequence to 47 instead of 38 millions, and suppose that these 47 millions of people imported 90 per cent. instead of 70 per cent. of the wheat they consume, if all this had been the outcome of unrestricted free trade, could this result have been regarded with unmixed satisfaction and without apprehension? Would it not appear to be a misdistribution of industry even more alarming, if not shocking, than that which now exists?

The possibility of Economic Disturbances that may lead to a somewhat sudden Check to the Demand for English Coal.

Seeing that England trades in her coal on account of the excellent quality of the coal, and the facility with which it can be worked and transported, a serious check would be encountered by this trade if any coalfield were opened that could be worked to still greater advantage. This seems a very unlikely thing, yet Baron von Richthofen, in his great work on China, speaks of certain coalfields there whose connection by rail with the great plain of China, and the great seaports, "could not fail to bring about a "revolution in the commerce and intercourse of the world." The facts that he communicates with regard to these coalfields are so remarkable, and the possibilities connected with them so momentous, that his account ought to be more widely known in England than it appears to be. I trust, therefore, that I may be

allowed to insert here a translation of a few passages relating to the most important of the coalfields referred to above. This coal-field occupies a plateau between 2,000 and 3,000 feet above sea-level in the south-east of the province of Shan-si, roughly speaking between $35\frac{1}{2}^{\circ}$ and 38° N., and 112° to 114° E. "The total area," writes Richthofen, "I estimate at . . . 634 German square miles" [about 13,470 English square miles]. "Since throughout this extent no interruption of the continuity of the coal strata occurs, and at every single place where the formation crops out on the surface there may be assumed to be at least 40 feet of workable coal, a probable minimum amount of 630,000 million tons of coal can easily be calculated for the whole area." In a note to this sentence Richthofen subjoins: "The thickness is here calculated at 12 metres, the specific gravity of the anthracite at 1.5. Both numbers are probably too low. Yet, even according to the result derived from these data, the anthracite would suffice to meet the coal consumption of the world at its present rate²¹ (300 million tons annually) for two thousand one hundred years." "If one takes into consideration," Richthofen proceeds in the text, "that only the most excellent anthracite is found,²² that everywhere a seam of at least 15 to 20 feet, mostly one of 20 to 30 feet in thickness occurs, that the stratification may be taken as undisturbed, and that on all the edges" [of the terrace], "especially the east side, the coal seams crop out through the nature of the superficial configuration; that, moreover, an extraordinary wealth of the most excellent iron ore is associated with this formation, one may well maintain that no other known coalfield in the world can be placed by the side of this one. Where, over a distance of 180 geographical miles, as between Yang-tshöng-hsien and Yü-hsien, one may almost at any point drive an adit for a certain distance directly into a seam of pure anthracite from 15 to 30 feet thick, an unlimited amount of heating power can be obtained more cheaply than in any other region hitherto examined. Here, as I pointed out on a former occasion, there will probably, in course of time, be developed a system of mining of a peculiar nature. Where the strata, as in Ping-ting-tshóu and Lo-ping district" [that is near the north-eastern margin of the field] "lie horizontally, and have only enough of a dip to the east to get rid of water, it will be possible to drive an adit in the main seam of 20 to 30 feet in thickness for miles in length (*meilenweit*) westward under the covering of overlying sandstones, 2,000 feet thick. However difficult the construction of a railway from the plain to the terrace is, the means to build one

²¹ Date of the volume 1882.

²² Elsewhere the author says, "equal to the best Pennsylvanian" (p. 435).

“ must be found in process of time; and then the railway wagons
 “ can be introduced right into the mines, and there loaded with
 “ coal for remote destinations.”²³

With regard to iron in this region, Richthofen speaking of one of the towns belonging to it, says, “ Here is one of the chief seats
 “ of the iron industry; for all the materials are at hand cheap, and
 “ the nature of the surface is admirably adapted for the establish-
 “ ment of the kind of ironworks usual in the country. The ore,
 “ an extremely pure mixture of brown hematite and spathic iron
 “ ore, is obtained in a number of small mines, scattered through
 “ the valley. . . . Anthracite of the most excellent quality is met
 “ within the immediate neighbourhood. . . . The price of the
 “ coal in large lumps is here not more than 10 tsiên for 100 kin
 “ (M. 0.56 a ton). The material for fireproof crucibles is also
 “ obtained near by.” To crown the advantages of this region, the
 author elsewhere refers to “ the situation of the eastern margin of
 “ the coal district, on the slope of the plateau leading down to the
 “ remarkably densely peopled and productive Great Plain, a plain
 “ intersected by navigable rivers, and capable of being cheaply
 “ provided with railways,” “ situated in the midst of a land which
 “ among all the countries of the world, possesses the greatest stores
 “ of cheap human labour in the highest degree efficient and intelli-
 “ gent.”²⁴

The one circumstance that has prevented these remarkable economic advantages from being turned to better account before now, is the difficulty, already referred to, of the communication between the plain and the surface of the plateau. So costly is the carriage of the coal (by means of asses) from the mines to the plain, that coal which at Ping-ting-tshóu, one of the places above mentioned on the north-east of the coalfield, costs about 1s. 4d. a ton, costs at Hwo-lu, a town about 80 miles distant, the nearest town on the plain on the road to Peking, about 50 times as much (M. 68). That one circumstance sufficiently indicates the badness of the road and the difficulties that will have to be encountered when a railway comes to be constructed up the edge of this plateau. Nevertheless, as Richthofen says, such a railway is almost sure to be laid sooner or later, and when it is laid it is bound to have important results. That the coal will enter into direct competition with British coal in any region in which British coal is now dominant, may be doubtful in view of the great distance of the coalfield from the sea. The north-eastern margin of the coalfield is about 225 miles in a direct line from Peking, the south-eastern about 600 from Shanghai. But the indirect effects of the opening

²³ “ China,” vol. ii, pp. 439 and 440.

²⁴ *Ibid.*, vol. ii, p. 473.

up of this coalfield may be very great. The region is sure to become the seat of varied manufactures, and to supply power for carrying on manufactures in the plain, and the development of these manufactures would probably soon put a check on the consumption of British goods in China. The existence of the coalfield described, as well as others in China, may perchance cause that country to be more rapidly overspread with railways than India, once a beginning is made. The railway material must in the first instances be imported, but if a native iron industry on a large scale is destined to be ultimately developed, an expectation which the circumstances seem to warrant, it is to be wished that the railway iron should come to be made as soon as possible, not in England, not in the United States, not in Germany, France, or Belgium, but in China, from Chinese ores, with Chinese labour, and with Chinese coal.

APPENDIX.

TABLE I.—Amount of Coal Produced in the Chief Coal Producing Countries.

(See

[Thousands of

Years.	Amount of Production.										
	Australasia.		Austria-Hungary. ^d			Belgium. ^e	Canada. ^f	France. ^g	Germany. ^h		
	New South Wales. ^b	New Zealand. ^c	Coal.	Lignite.	Total.				Coal.	Lignite.	Total.
1850	—	—	—	—	—	—	—	4,434,	5,184,	1,522,	6,770,
'51	—	—	—	—	—	—	—	4,485,	5,675,	1,734,	7,419,
'52	—	—	—	—	—	—	—	4,904,	6,381,	1,987,	8,368,
'53	—	—	—	—	—	—	—	5,938,	7,086,	2,389,	9,475,
'54	117,	—	—	—	—	—	—	6,827,	8,329,	2,478,	10,806,
'55	137,	—	1,180,	921,	2,101,	—	—	7,453,	9,816,	2,722,	12,538,
'56	190,	—	1,288,	1,050,	2,338,	—	—	7,926,	10,693,	3,030,	13,723,
'57	210,	—	1,397,	1,116,	2,513,	—	—	7,902,	11,279,	3,588,	14,867,
'58	216,	—	1,610,	1,290,	2,900,	8,926,	—	7,353,	—	—	—
'59	308,	—	1,804,	1,321,	3,125,	—	—	7,483,	—	—	—
1860	369,	—	1,948,	1,548,	3,496,	9,611,	—	8,304,	12,348,	4,383,	16,731,
'61	342,	—	2,268,	1,790,	4,058,	—	—	9,423,	14,133,	4,622,	18,755,
'62	477,	—	2,523,	2,013,	4,536,	10,350,	—	10,290,	15,576,	5,084,	20,660,
'63	434,	—	—	—	—	10,500,	—	10,710,	16,907,	5,460,	22,367,
'64	549,	—	—	—	—	—	—	11,243,	19,409,	6,204,	25,613,
'65	586,	—	—	—	—	11,841,	—	11,600,	21,795,	6,758,	28,553,
'66	774,	—	—	—	—	12,774,	—	12,260,	21,630,	6,533,	28,163,
'67	770,	—	—	—	—	12,755,	—	12,739,	23,808,	6,995,	30,803,
'68	954,	—	—	—	—	12,298,	557,	13,254,	25,705,	7,174,	32,879,
'69	920,	—	—	—	—	12,943,	614,	13,464,	26,774,	7,570,	34,344,
1870	869,	—	—	—	—	13,697,	656,	13,330,	26,398,	7,605,	34,003,
'71	899,	—	—	—	—	13,733,	718,	13,259,	29,373,	8,483,	37,856,
'72	1,012,	—	—	—	—	15,658,	927,	15,803,	33,306,	9,018,	42,324,
'73	1,193,	—	—	—	—	15,778,	1,099,	17,479,	36,392,	9,753,	46,145,
'74	1,305,	—	—	—	—	14,669,	954,	16,908,	35,919,	10,740,	46,659,
'75	1,330,	—	5,185,	—	—	15,011,	891,	16,957,	37,436,	10,368,	47,804,
'76	1,320,	—	5,595,	7,824,	13,419,	14,329,	849,	17,101,	38,454,	11,096,	49,555,
'77	1,444,	—	5,568,	8,033,	13,601,	13,938,	912,	16,805,	37,530,	10,700,	48,230,
'78	1,576,	162,	5,765,	8,150,	13,915,	14,399,	991,	16,961,	39,590,	10,930,	50,520,
'79	1,583,	231,	6,053,	8,838,	14,891,	15,447,	1,029,	17,111,	42,026,	11,445,	53,471,
1880	1,446,	300,	6,695,	9,434,	16,129,	16,866,	1,301,	19,362,	46,974,	12,145,	59,119,
'81	1,775,	337,	7,192,	10,074,	17,266,	16,873,	1,352,	19,776,	48,688,	12,852,	61,540,
'82	2,109,	378,	7,358,	10,256,	17,614,	17,590,	1,648,	20,604,	52,119,	13,260,	65,379,
'83	2,522,	422,	8,087,	11,328,	19,414,	18,177,	1,636,	21,334,	55,943,	14,500,	70,443,
'84	2,749,	481,	8,131,	11,593,	19,725,	18,051,	1,783,	20,024,	57,234,	14,880,	72,114,
'85	2,879,	511,	8,335,	12,101,	20,435,	17,437,	1,763,	19,511,	58,320,	15,355,	73,675,
'86	2,830,	534,	8,281,	12,499,	20,779,	17,285,	1,868,	19,910,	58,057,	15,626,	73,683,
'87	2,923,	559,	8,583,	13,297,	21,880,	18,375,	2,159,	21,288,	60,334,	15,899,	76,233,
'88	3,203,	614,	9,125,	14,734,	23,859,	19,185,	2,373,	22,603,	65,122,	16,542,	81,664,
'89	—	—	—	—	—	19,810,	—	24,589,	67,341,	17,551,	84,892,

APPENDIX.

World, with the Amount of the Home Consumption in some of these Countries.

(xt.)

mitted.]

Amount of Production.							Home Consumption.			
Japan. ^j	Russia. ^k	Spain. ^l	United Kingdom. ^m	United States. ⁿ			Canada.	France.	Germany. ^o	United Kingdom.
		Coal and Lignite.		Anthracite.	Bituminous.	Total.				
—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—
—	—	—	66,661,	—	—	—	—	10,857,	—	62,302,
—	—	—	66,453,	—	—	—	—	12,294,	—	61,391,
—	—	—	68,645,	—	—	—	—	12,896,	—	62,696,
—	—	—	67,394,	—	—	—	—	13,149,	—	60,572,
—	—	114,	67,009,	—	—	—	—	12,893,	—	60,410,
—	—	—	73,980,	—	—	—	—	13,262,	—	66,898,
—	—	—	—	—	—	—	—	—	—	—
—	—	—	82,043,	9,398,	5,775,	15,173,	—	14,270,	—	74,630,
—	—	—	85,635,	—	—	—	—	15,403,	—	77,700,
—	—	—	83,638,	—	—	—	—	16,275,	—	75,257,
—	—	—	88,292,	—	—	—	—	16,513,	—	79,949,
—	—	—	92,788,	—	—	—	—	17,491,	—	83,887,
—	—	—	98,151,	—	—	—	—	18,522,	—	88,868,
—	390,	—	101,631,	—	—	—	—	20,058,	—	91,489,
—	437,	—	104,500,	—	—	—	—	20,160,	—	93,934,
—	500,	320,(?)	103,141,	—	—	—	638,	20,912,	—	92,174,
—	610,	—	107,428,	—	—	—	568,	21,433,	—	96,683,
—	—	—	—	—	—	—	—	—	—	—
—	760,	—	110,431,	15,664,	17,199,	32,864,	768,	18,830,	—	98,728,
—	829,	—	117,352,	—	—	—	761,	18,860,	—	104,604,
—	1,097,	—	123,497,	—	—	—	1,096,	23,233,	31,754,	110,299,
—	1,170,	—	127,017,	—	—	—	1,249,	24,702,	33,828,	114,399,
—	1,369,	—	125,068,	—	—	—	1,299,	23,418,	33,531,	111,141,
—	1,709,	—	131,867,	—	—	—	1,216,	24,658,	34,789,	117,322,
—	2,050,	—	133,345,	—	—	—	1,309,	24,472,	35,272,	117,046,
496,	2,360,	—	134,611,	—	—	—	1,563,	24,144,	34,547,	119,191,
676,	2,500,	760,(?)	132,608,	—	—	—	1,487,	24,555,	35,695,	117,113,
856,	2,846,	—	134,008,	—	—	—	1,561,	25,332,	37,908,	117,566,
—	—	—	—	—	—	—	—	—	—	—
876,	3,188,	847,	146,819,	28,621,	41,860,	70,481,	1,870,	28,846,	41,796,	128,099,
919,	3,437,	1,210,	154,184,	28,510,	48,352,	76,862,	2,018,	29,445,	43,183,	134,597,
926,	3,773,	1,196,	156,500,	31,358,	60,861,	92,219,	2,418,	31,025,	46,578,	135,566,
998,	3,800,	1,070,	163,737,	34,336,	68,532,	102,868,	2,756,	32,439,	49,419,	140,961,
1,134,	3,950,	979,	160,758,	33,176,	73,731,	106,906,	3,176,	30,941,	50,714,	137,408,
1,237,	4,202,	946,	159,351,	34,229,	64,841,	99,069,	3,071,	30,035,	51,740,	135,580,
1,305,	4,580,	1,001,	157,618,	34,853,	65,811,	100,664,	3,139,	29,619,	51,962,	134,235,
1,492,	4,448,	1,038,	162,120,	37,579,	78,471,	116,050,	3,698,	31,191,	54,227,	137,659,
2,078,	—	1,203, ^p	169,935,	41,625,	91,107,	132,732,	4,146,	—	58,915,	142,964,
—	—	—	176,917,	—	—	—	—	—	60,818,	147,961,

NOTES to TABLE I.

^a Metric tons (2,205 lbs.) in the case of Austria-Hungary, Belgium, France, Germany, and Spain; in other cases tons avoirdupois (2,240 lbs.).

^b From Liversidge, "Mineral Resources of New South Wales;" 1887 and 1888 from "Australasian Statistics," by the Government statistician of New South Wales (Sydney, 1889).

^c From the "Bulletin du Ministère des Travaux Publics," tome xx, July, 1889 (Paris, 1889); the figures for 1888 kindly communicated to me by the agent-general for New Zealand. During the period 1878-88 the import of coal into New Zealand declined from 174,148 tons to 101,341 tons. Among the Australasian colonies, Queensland also produces considerable quantities of coal. In 1885 it produced 210,000 tons; in 1887, 239,000; in 1888, 311,000.

^d The figures for 1850-62 are based on Geinitz, Fleck, and Hartig, "Die Steinkohlen Deutschlands und anderer Länder Europas" (Munich, 1865), and do not include the lignite production of Lombardy and Venetia; the remaining figures from "Statistisches Handbuch," new series (Vienna, 1888).

^e The figures for 1858, 1862, and 1863 from Geinitz, Fleck, and Hartig, "Die Steinkohlen," &c.; the remaining figures from the "Annuaire Statistique de la Belgique" (Brussels, 1889) and the last Report of the Secretary to the Members of the British Iron Trade Association, which is the authority for most of the figures for the year 1888 and 1889.

^f From Johnson's "Graphic Statistics of Canada" and official reports on the Mineral Statistics of Canada. The figures of the original authorities are converted from "short" tons (2,000 lbs.) into long tons.

^g From the "Statistique de l'Industrie minérale" for 1887, p. 24.

^h Years 1850-57 from Pechar, "Kohle und Eisen in allen Ländern" (Berlin, 1878); the remaining years mostly from numbers of the "Statistisches Jahrbuch."

ⁱ Mostly from the annual reports on the Moral and Material Progress of India, which unfortunately do not in all cases furnish the desired information. The figures for 1858-60 are from the *Journal of the Statistical Society*, vol. xxiv, p. 602.

^j The years 1877 and 1878 from Rein's "Industries of Japan;" the years 1879-86 from the "Résumé de la Statistique de l'Empire du Japon;" the figures for 1887 and 1888 kindly supplied to me by the Japanese consul-general in London. These last figures are for calendar years; in the other cases they are for calendar years for private mines, for financial years ending 31st March for Government mines.

^k From the Report to the British Iron Trade Association; the data for 1887 kindly furnished to me by the British consul-general at St. Petersburg.

^l The year 1858 from the "Mineral Resources of the United Kingdom for 1858;" 1880-88 from the "Revista Minera." The figures for 1868 and 1878 are inserted somewhat at random on the strength of a statement quoted in the "Revista Minera" for 1880, p. 316.

^m From various numbers of the "Statistical Abstract for the United Kingdom" (see text, pp. 562 and 563).

ⁿ From the "Statistical Abstract for the United States" and different volumes of the "Mineral Resources of the United States."

^o Exclusive of lignite and coke.

^p Coal only (from the Report to the British Iron Trade Association for 1889).

TABLE II.—*Export of Coal from the United Kingdom.**

(Referred to on p. 577 of text.)

[Thousands of tons. 000's omitted.]

Year.	To									
	France.	Holland and Germany.	Den- mark.	Italy.	Spain and Portugal.	Russia.		Egypt.	India.	Total.
						North.	South.			
1855	938,	1,033,	—	—	268,	—	—	42,	102,	5,062,
'56	1,158,	1,185,	—	—	373,	228,	77	86,	87.6	5,949,
'57	1,279,	1,358,	—	—	416,	278,	35.2	115,	194,	6,822,
'58	1,325,	1,397,	—	—	415,	278,	35.9	83,	86.6	6,597,
'59	1,391,	1,404,	—	—	521,	299,	48.5	111,	101,	7,082,
1860	1,352,	1,429,	—	—	550,	287,	69.4	111,	164,	7,413,
'61	1,452,	1,648,	427,	—	587,	354,	53.2	118,	218,	7,935,
'62	1,443,	1,644,	430,	—	630,	372,	65.8	156,	164,	8,381,
'63	1,306,	1,572,	430,	—	670,	417,	43.6	265,	238,	8,343,
'64	1,448,	1,398,	489,	—	659,	398,	75.3	357,	236,	8,901,
'65	1,590,	1,780,	545,	—	607,	384,	104,	389,	245,	9,283,
'66	1,931,	1,636,	540,	—	671,	493,	80.7	326,	309,	10,142,
'67	1,996,	1,770,	544,	567,	641,	467,	130,	413,	511,	10,566,
'68	1,926,	1,956,	642,	637,	659,	515,	114,	352,	400,	10,967,
'69	2,000,	1,861,	559,	725,	652,	508,	134,	478,	321,	10,745,
1870	2,107,	2,016,	705,	809,	798,	647,	183,	420,	272,	11,703,
'71	2,006,	2,903,	659,	826,	746,	705,	209,	481,	359,	12,748,
'72	2,192,	2,585,	642,	929,	830,	593,	203,	527,	344,	13,198,
'73	2,479,	2,134,	593,	803,	837,	512,	101,	548,	313,	12,618,
'74	2,371,	2,505,	662,	966,	780,	710,	174,	639,	382,	13,927,
'75	2,706,	2,628,	749,	1,006,	927,	705,	191,	533,	379,	14,545,
'76	3,251,	2,760,	780,	1,214,	980,	946,	241,	545,	493,	16,299,
'77	3,010,	2,455,	766,	1,073,	1,052,	944,	85,	520,	577,	15,420,
'78	3,050,	2,339,	710,	1,131,	989,	947,	334,	527,	405,	15,495,
'79	3,317,	2,476,	786,	1,371,	1,124,	1,041,	211,	517,	488,	16,442,
1880	3,716,	2,739,	864,	1,535,	1,167,	1,205,	298,	652,	671,	18,720,
'81	3,604,	2,593,	964,	1,728,	1,259,	1,142,	256,	877,	661,	19,587,
'82	4,097,	2,760,	1,001,	1,821,	1,430,	1,358,	323,	770,	560,	20,934,
'83	4,481,	2,889,	1,102,	2,212,	1,526,	1,232,	332,	969,	687,	22,776,
'84	4,367,	2,912,	1,129,	2,354,	1,571,	1,223,	329,	1,125,	707,	23,350,
'85	4,216,	2,962,	1,160,	2,705,	1,600,	1,240,	231,	1,143,	808,	23,771,
'86	4,081,	3,127,	1,138,	2,852,	1,699,	1,255,	205,	1,005,	727,	23,283,
'87	4,219,	3,075,	1,171,	3,186,	1,805,	1,230,	54,	1,269,	814,	24,461,
'88	4,193,	3,362,	1,325,	3,472,	1,836,	1,286,	271,	1,429,	849,	26,971,
'89	4,037,	3,976,	1,381,	3,621,	1,962,	1,520,	286,	1,466,	682,	28,956,

* The export of coal from the United Kingdom to the United States is now mostly under a quarter of a million tons annually. The bulk of it is to the Pacific ports, and this export fluctuates somewhat in harmony with the import of wheat from these ports (see p. 582 of text). The export of coal to Canada is now generally less than 100,000 tons. New Zealand and Western Australia are the only Australasian colonies that are entered in the "Annual Statement of the Trade of the United Kingdom" as receiving British coal. The other colonies received their supplies from New South Wales even as early as 1855. New Zealand ceased to be entered as an importer of British coal after 1871 (see note c to Table I). Western Australia has since then also ceased to be entered as receiving British coal.

TABLE III.—*Average Rate of Increase per Cent. per Annum*

In most cases the years at the beginning and end of the periods for which the

	Periods of Five Years.					
	1855 to 1860.	1860 to 1865.	1865 to 1870.	1870 to 1875.	1875 to 1880.	1880 to 1885.
<i>Austria-Hungary</i> —						
Production of coal	—	—	—	—	—	4'4
„ lignite	—	—	—	—	—	5'0
<i>Belgium</i> —						
Production of coal	—	—	—	—	—	—
<i>Canada</i> —						
Production of coal (total)	—	—	—	—	—	—
Home consumption of coal.....	—	—	—	—	—	—
<i>Nova Scotia</i> —						
Production of coal	—	—	—	—	—	—
<i>British Columbia</i> —						
Production of coal	—	—	—	—	—	—
<i>France</i> —						
Production of coal	2'57	6'85	2'67	4'94	1'99	1'1
Home consumption of coal.....	—	—	—	—	—	—
<i>Germany</i> —						
Production of coal	—	11'15 ^e	5'61	6'26	4'25	4'7
„ lignite	—	8'20 ^e	3'95	6'36	2'51	4'7
„ coal and lignite	—	—	—	—	—	—
Home consumption of coal (ex- cluding lignite).....	—	—	—	—	—	—
<i>India</i> —						
Production of coal	—	—	—	—	—	—
<i>Japan</i> —						
Production of coal	—	—	—	—	—	—
<i>New South Wales</i> —						
Production of coal	18'10	13'37	7'08	8'03	3'97	11'9
Export of coal	—	—	—	—	—	—
<i>New Zealand</i> —						
Production of coal	—	—	—	—	—	—
<i>Russia</i> —						
Production of coal	—	—	18'34	18'45	13'06	6'1
<i>Spain</i> —						
Production of coal	—	—	—	—	—	—
<i>United Kingdom</i> —						
Production of coal	3'68	3'90	2'76	3'09	2'20	1'8
Export of coal	—	—	—	—	—	—
Home consumption of coal.....	—	—	—	—	—	—
<i>United States</i> —						
Production of Pennsylvania an- thracite	—	—	—	—	—	—
Production of bituminous coal	—	—	—	—	—	—
Total production of coal and an- thracite	—	—	—	—	—	—
Total production of coal, anthra- cite, and natural gas ^o	—	—	—	—	—	—

* Mean 1860 to mean 1880. ^b Year 1850 to year 1860. ^c Year 1860 to mean 1870^d From mean 1873 to mean 1880, 2'29 per cent. per annum.^e From the year 1860 to mean 1865 or 1870.^f Mean 1873 to mean 1880.^g Mean 1859 to year 1868.^h Year 1868 to mean 1879.

Amount of Production, &c., of Coal in different Countries.

culated are the means of three successive years. See pp. 563 and 577 of text.

Periods of More than Five Years.						
1860. to 1870.	1870 to 1880.	1880 to 1886.	1880 to 1887.	1880 to 1888.		
—	6·17 ^a	—	3·86	—	<i>Austria-Hungary—</i>	
—	9·45 ^a	—	5·24	—	Production of coal lignite	
14 ^b	3·42 ^c	2·00	—	1·56	1·94	<i>Belgium—</i>
—	—	6·36	—	8·22	—	Production of coal
—	—	10·02	—	10·54	—	<i>Canada—</i>
—	—	5·34	—	7·70	—	Production of coal (total)
—	—	21·15	—	8·27	—	Home consumption of coal
—	—	—	—	—	—	<i>Nova Scotia—</i>
—	—	—	—	—	—	Production of coal
—	—	—	—	—	—	<i>British Columbia—</i>
—	—	—	—	—	—	Production of coal
87	4·74	3·45	—	1·81	2·49	<i>France—</i>
—	0·90	3·53 ^d	1·38	—	—	Production of coal
—	—	—	—	—	—	Home consumption of coal
07 ^b	8·34 ^e	5·25	—	4·19	4·30	<i>Germany—</i>
16 ^b	6·05 ^e	4·42	—	4·04	4·03	Production of coal
—	7·78 ^e	5·07	—	4·16	4·24	„ lignite
—	—	3·12 ^f	—	4·31	4·44	„ coal and lignite
—	—	—	—	—	—	{ Home consumption of coal (ex- cluding lignite)
—	5·01 ^g	6·43 ^h	5·28 ⁱ	—	—	<i>India—</i>
—	—	—	8·98 ^j	9·09	—	Production of coal
—	10·18	5·98	—	9·30	—	<i>Japan—</i>
—	10·95	4·82	—	10·12	—	Production of coal
—	—	—	—	11·93 ^k	—	Export of coal
—	—	15·72	5·73	—	—	<i>New Zealand—</i>
—	—	—	—	—	—	Production of coal
—	10·87 ^l	9·06 ^l	3·53 ^l	—	—	<i>Russia—</i>
—	3·33	2·64	—	1·71	1·98	Production of coal
—	4·61	4·52	—	4·54	4·92	<i>Spain—</i>
—	3·19	2·40 ^m	—	1·25	1·51	Production of coal
—	—	—	—	—	—	Export of coal
—	5·24 ⁿ	6·21 ⁿ	—	4·14 ⁿ	—	Home consumption of coal
—	11·53	9·30	—	9·39	—	<i>United Kingdom—</i>
—	8·04	7·93	—	7·44	—	Production of coal
—	—	—	—	8·75	—	Export of coal
—	—	—	—	—	—	Home consumption of coal
—	—	—	—	—	—	<i>United States—</i>
—	—	—	—	—	—	{ Production of Pennsylvania an- thracite
—	—	—	—	—	—	Production of bituminous coal
—	—	—	—	—	—	{ Total production of coal and an- thracite
—	—	—	—	—	—	{ Total production of coal, anthra- cite, and natural gas ^o

Mean 1879 to mean 1886. ^j Mean 1878 to mean 1886. ^k Mean 1879 to mean 1887.

Years 1858 to 1868, 1868 to 1878, 1878 to 1886. See notes to Table I.

Mean 1873-80, 1·79 per cent. per annum.

Years 1860, 1870, 1880 (not means).

^o See text, p. 564.

TABLE IV.—*Production of Pig Iron and*

(Referred to on pp. 5)

[Thousands of tons]

Year.	Pig Iron.								
	Austria-Hungary.	Belgium.	France. ^b	Germany. ^c	New South Wales. ^d	Russia.	Spain. ^e	Sweden.	United Kingdom.
1854....	—	—	771,	—	—	—	—	—	3,070,
'55....	—	—	849,	—	—	260,	—	184,	3,218,
'56....	—	—	923,	—	—	—	—	—	3,586,
'57....	—	—	992,	—	—	—	—	—	3,659,
'58....	—	—	872,	—	—	—	—	—	3,456,
'59....	—	—	864,	—	—	—	—	—	3,713,
1860....	313,	320,	898,	529,	—	291,	—	181,	3,827,
'61....	—	—	967,	592,	—	—	—	—	3,712,
'62....	—	—	1,091,	696,	—	—	—	—	3,943,
'63....	—	—	1,157,	813,	—	—	—	—	4,510,
'64....	—	—	1,213,	905,	—	—	—	—	4,768,
'65....	—	471,	1,204,	988,	—	310,	—	222,	4,819,
'66....	285,	—	1,260,	1,047,	—	—	—	—	4,524,
'67....	320,	423,	1,229,	1,114,	—	—	—	—	4,761,
'68....	395,	436,	1,235,	1,264,	—	—	—	—	4,970,
'69....	405,	534,	1,381,	1,413,	—	—	—	285,	5,446,
1870....	403,	565,	1,178,	1,391,	—	352,	—	293,	5,964,
'71....	425,	609,	860,	1,564,	—	352,	—	293,	6,627,
'72....	460,	656,	1,218,	1,988,	—	391,	—	335,	6,742,
'73....	535,	607,	1,381,	2,241,	—	376,	—	339,	6,566,
'74....	495,	533,	1,416,	1,906,	—	372,	—	332,	5,991,
'75....	455,	540,	1,446,	2,029,	0'04	420,	—	344,	6,365,
'76....	400,	491,	1,435,	1,846,	2'7	420,	—	345,	6,556,
'77....	409,	470,	1,507,	1,933,	2'6	420,	—	336,	6,609,
'78....	424,	494,	1,521,	2,148,	0'9	—	—	333,	6,381,
'79....	404,	448,	1,400,	2,227,	1'1	430,	—	348,	5,995,
1880....	466,	610,	1,725,	2,729,	2'3	—	164,	406,	7,749,
'81....	543,	625,	1,886,	2,914,	6'6	—	114,	435,	8,144,
'82....	612,	727,	2,039,	3,381,	7'5	—	120,	399,	8,587,
'83....	710,	783,	2,069,	3,470,	3'4	—	140,	423,	8,552,
'84....	717,	751,	1,872,	3,601,	3'8	—	125,	431,	7,812,
'85....	699,	713,	1,631,	3,687,	4'2	—	159,	465,	7,415,
'86....	718,	701,	1,517,	3,529,	3'7	532,	56,	442,	7,010,
'87....	705,	756,	1,568,	4,024,	2'8	601,	289,	457,	7,560,
'88....	762,	827,	1,689,	4,229,	—	—	232,	457,	7,999,
'89....	—	847,	1,722,	4,525,	—	—	—	—	8,245,

Note.—The figures in this table are mainly derived from the Report to the British Iron Trade Association for 1889 except where otherwise stated. The figures for the United States have been converted from "short" tons (2,000 lbs.) into long tons.

^a Tons avoirdupois for New South Wales, Russia, the United Kingdom, and the United States; metric tons for the other countries.

^b From different volumes of the "Statistique de l'Industrie Minérale;" 1888 and 1889 from the report cited in the note above. Both in France and Germany "cast iron of the fusion" is included under pig iron.

Ore in different Countries.

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mitted.]

Pig Iron.	Iron Ore.								Year.
	World. ^s	Algeria. ^b	Belgium.	France. ^b	Germany. ^c	Italy.	Spain. ^e	United Kingdom. ^f	
7,	—	—	—	—	—	—	—	—	1854
0,	—	—	—	—	—	—	—	9,554,	'55
8,	7,000,	—	—	—	—	—	—	10,483,	'56
3,	—	—	—	—	—	—	—	9,573,	'57
0,	—	—	—	—	—	—	—	8,041,	'58
1,	—	—	—	—	—	—	—	7,877,	'59
1,	—	—	809,	—	1,401,	—	—	8,024,	1860
3,	—	—	—	—	1,808,	—	—	7,216,	'61
3,	—	—	—	—	2,216,	—	—	7,562,	'62
6,	—	—	—	—	2,375,	—	—	9,089,	'63
4,	—	—	—	—	2,620,	—	—	10,065,	'64
2,	9,250,	—	—	—	3,013,	—	—	9,910,	'65
5,	9,300,	—	—	—	2,996,	—	—	9,665,	'66
5,	9,850,	—	—	—	3,265,	—	—	10,021,	'67
1,	10,400,	—	—	—	3,634,	—	—	10,169,	'68
1,	11,575,	—	—	—	4,084,	—	—	11,509,	'69
6,	11,900,	157,	654,	2,614,	3,839,	—	—	14,371,	1870
7,	12,500,	163,	—	1,852,	4,368,	—	—	16,335,	'71
9,	13,925,	374,	750,	2,782,	5,896,	—	—	15,584,	'72
1,	14,675,	445,	778,	3,051,	6,178,	—	—	15,577,	'73
1,	13,500,	535,	527,	2,516,	5,138,	—	—	14,845,	'74
4,	13,675,	557,	365,	2,506,	4,730,	—	—	15,821,	'75
9,	13,475,	512,	269,	2,393,	4,712,	—	—	16,842,	'76
7,	13,675,	454,	234,	2,426,	4,980,	—	—	16,686,	'77
1,	13,925,	376,	207,	2,470,	5,462,	—	—	15,726,	'78
2,	13,950,	418,	195,	2,271,	5,859,	—	—	14,380,	'79
5,	17,950,	614,	254,	2,874,	7,239,	289,	3,565,	18,026,	1880
4,	19,400,	657,	225,	3,032,	7,601,	421,	3,503,	17,446,	'81
3,	20,750,	567,	—	3,467,	8,263,	242,	4,726,	18,032,	'82
6,	21,000,	557,	216,	3,298,	8,757,	204,	4,526,	17,383,	'83
8,	19,475,	493,	176,	2,977,	9,006,	225,	3,907,	16,138,	'84
5,	19,100,	419,	187,	2,318,	9,158,	201,	3,933,	15,418,	'85
3,	20,386,	433,	153,	2,286,	8,486,	209,	4,167,	14,110,	'86
7,	22,171,	438,	172,	2,579,	9,351,	—	6,796,	13,098,	'87
0,	23,413,	—	—	—	10,665,	—	4,500,	14,591,	'88
4,	25,059,	—	—	—	11,010,	—	—	15,234, ^h	'89

^s From the "Statistisches Jahrbuch für das Deutsche Reich," and the "Monatshefte zur Statistik des Deutschen Reichs." See also note B.

^b From Liversidge, "Mineral Resources of New South Wales."

^c From the "Revista Minera."

^e From "Statistical Abstracts" and "Mineral Statistics of the United Kingdom" (ore, from the latter).

^f From "Mineral Resources of the United States for 1887," p. 579. The totals for 1888 and 1889 calculated in the same manner as those for preceding years in that table.

^h Estimated.

TABLE V.—*Production of Steel in different Countries.*

(Referred to on p. 570 of text.)

[Thousands of tons.^a 000's omitted.]

Year.	Bessemer Steel Ingots.					Bessemer and Open Hearth.		All Kinds.		
	Austria.	Belgium.	France.	Sweden.	United Kingdom.	Germany.	United Kingdom.	Russia.	United Kingdom.	United States.
1870	22,	6,	84,	12,	215,	126,	—	—	—	70,
'71	36,	11,	80,	9,	329,	143,	—	—	—	75,
'72	55,	15,	130,	16,	410,	189,	—	—	—	143,
'73	77,	21,	156,	16,	496,	248,	—	—	—	199,
'74	97,	37,	217,	21,	540,	325,	—	—	—	216,
'75	89,	54,	239,	19,	620,	318,	—	—	—	390,
'76	90,	72,	231,	21,	700,	340,	—	—	—	533,
'77	97,	85,	250,	17,	750,	391,	—	40,	—	570,
'78	85,	115,	282,	19,	808,	463,	—	62,	—	732,
'79	86,	85,	339,	20,	835,	469,	1,010,	203,	—	935,
'80	101,	95,	385,	30,	1,044,	661,	1,295,	296,	—	1,247,
'81	130,	125,	418,	39,	1,442,	897,	1,780,	285,	—	1,588,
'82	150,	178,	454,	47,	1,674,	1,075,	2,110,	249,	—	1,741,
'83	170,	179,	460,	51,	1,553,	1,061,	2,009,	256,	—	1,674,
'84	165,	186,	336,	53,	1,300,	1,138,	2,775,	172,	—	1,551,
'85	170,	155,	364,	52,	1,304,	1,202,	1,888,	—	—	1,712,
'86	200,	138,	348,	54,	1,571,	1,376,	2,265,	—	2,365,	2,563,
'87	275,	191,	325,	68,	2,064,	1,738,	3,046,	—	3,171,	3,339,
'88	300,	185,	—	—	2,013,	1,863,	3,306,	—	3,406,	2,899,
'89	—	—	—	—	2,141,	—	3,570,	—	3,670,	3,386,

^a Tons avoidupois for Russia, the United Kingdom, and the United States; metric tons for the other countries. The data in this table are mainly derived from the Annual Reports to the British Iron Trade Association. The figures for the United States are from volumes of the "Mineral Resources of the United States," except for the years 1870, 1871, 1888, and 1889. Those for 1870 and 1871 are from the "Board of Trade Journal," No. 8, p. 249; for 1888 from the "British Iron Trade Association Report." The original figures have in most cases been converted from short into long tons.

TABLE VI.—*Production of Pig Iron in the Five leading Producing Countries, on the average of Four successive Periods.**

(Referred to on p. 569 of text.)

Countries.	Percentage of the Aggregate Production of the Five Countries.			
	1871-75.	1876-80.	1881-85.	1886-89.
United Kingdom	52·0	49·9	44·2	37·4
„ States	18·0	19·2	23·5	31·8
Germany (including Luxem- burg)	15·4	16·1	18·3	19·5
France	9·9	11·1	10·2	7·6
Belgium	4·7	3·7	3·8	3·7
Average total production of the five countries in mil- lions of tons (avoirdupois) }	12·43	13·35	18·33	20·60

* Mainly from my “Handbook of Commercial Geography” (by permission of Messrs. Longmans, Green, and Co.).

TABLE VII.—*Ratio of Imported Iron Ore to the Total Consumption of Iron Ore in the United Kingdom and Germany.*

(Referred to on p. 570 of text.)

Year.	United Kingdom.*	Germany.	Year.	United Kingdom.	Germany.	Year.	United Kingdom.	Germany.
	Per cent.	Per cent.		Per cent.	Per cent.		Per cent.	Per cent.
1869....	1·14	—	1876	3·99	4·66	1883	15·40	10·45
'70....	1·45	—	'77	6·83	7·29	'84	14·48	12·35
'71....	1·90	—	'78	7·46	6·82	'85	15·48	10·34
'72....	5·14	4·66	'79	7·04	7·32	'86	17·01	10·88
'73....	6·22	6·19	'80	12·74	9·22	'87	22·41	11·99
'74....	4·76	0·99	'81	12·30	9·09	'88	19·63	12·10
'75....	2·89	5·08	'82	16·48	10·57	'89	20·4	12·27

* Mainly from the “Annual Statistical Reports of the Secretary to the “Members of the British Iron Trade Association.” These percentages do not take into account the imported “purple ore,” that is, the residue of cupreous iron pyrites used in iron blast furnaces after having sulphur and copper extracted from it. This ore being taken into account, the proportion of foreign ore to the total consumption in the United Kingdom in 1887 was 24·42 per cent., in 1888 21·64 per cent. The percentage for the years 1884-88 inclusive has been independently calculated, and the figures in the table differ slightly from those in the reports mentioned, through the fact that for these years the small British exports of iron ore are taken into account.

TABLE VIII.—*Export of Iron and Steel of all Sorts, Manufactured and Unmanufactured, of Native Origin, from the United Kingdom.*

[Thousands of tons. 000's omitted.]

Year.	To										
	France.	Bel- gium.	Holland and Ger- many.	Italy.	Russia.	India.	Austral- Colonies.	Canada.	United States.		Total.
									Ex- cluding Tin- Plate.	In- cluding Tin- Plate.	
1855	148,	1'85	170,	—	—	131,	38'3	—	310,	—	1,093,
'56	173,	2'8	262,	—	21'1	169,	55'4	—	353,	—	1,439,
'57	134,	6'1	260,	—	14'7	160,	65'0	—	333,	—	1,532,
'58	95'0	5'5	296,	—	70'4	197,	54'4	—	176,	—	1,404,
'59	82'7	3'9	196,	—	132,	214,	69'2	—	369,	—	1,526,
1860	80'6	4'5	163,	—	74'4	202,	74'9	—	387,	—	1,503,
'61	163,	4'3	224,	—	51'7	193,	63'0	—	110,	—	1,359,
'62	268,	7'5	261,	—	34'4	154,	56'8	—	130,	—	1,557,
'63	184,	10'5	262,	—	67'1	161,	79'3	—	228,	—	1,703,
'64	142,	11'8	213,	—	54'9	140,	71'8	—	305,	—	1,559,
'65	151,	32'7	307,	—	77'1	192,	84'8	—	186,	—	1,687,
'66	137,	45'3	209,	—	87'5	225,	90'4	—	348,	—	1,762,
'67	121,	58'6	227,	61'5	168,	310,	79'5	—	432,	—	1,968,
'68	107,	50'1	282,	65'8	162,	203,	83'2	75'6	528,	—	2,042,
'69	134,	82'5	348,	104,	317,	194,	114,	96'9	660,	—	2,675,
1870	109,	102,	425,	82'9	308,	230,	75'7	154,	832,	—	2,826,
'71	85'8	109,	614,	89'3	201,	104,	80'8	232,	—	1,064,	3,169,
'72	109,	174,	841,	68'1	183,	62'1	118,	265,	—	975,	3,383,
'73	111,	189,	806,	99'8	293,	74'0	132,	150,	—	493,	2,958,
'74	85'3	120,	472,	75'0	271,	117,	208,	164,	—	287,	2,488,
'75	107,	118,	579,	80'9	226,	136,	237,	175,	—	208,	2,457,
'76	114,	123,	584,	87'9	176,	153,	161,	133,	—	160,	2,224,
'77	124,	105,	525,	77'0	146,	224,	264,	120,	—	169,	2,346,
'78	114,	99'4	567,	79'1	190,	207,	250,	104,	—	159,	2,297,
'79	103,	91'2	518,	105,	232,	190,	201,	147,	—	721,	2,883,
1880	119,	128,	493,	102,	236,	274,	246,	214,	—	1,370,	3,793,
'81	183,	91'6	558,	130,	192,	211,	315,	236,	—	1,175,	3,820,
'82	215,	99'8	700,	176,	167,	278,	377,	255,	—	1,212,	4,354,
'83	202,	106,	649,	225,	157,	360,	399,	232,	—	707,	4,043,
'84	132,	65'2	607,	144,	208,	338,	377,	181,	—	463,	3,497,
'85	101,	39'5	454,	139,	130,	456,	409,	194,	—	404,	3,131,
'86	67'5	37'3	343,	168,	165,	441,	374,	256,	—	809,	3,388,
'87	52'7	52'7	357,	270,	106,	567,	329,	262,	—	1,286,	4,143,
'88	76'8	99'0	503,	123,	94'0	525,	399,	256,	—	643,	3,967,
'89	70'9	81'6	650,	185,	110,	441,	384,	277,	—	579,	4,187,

TABLE IX.—Average Rate of Increase per Cent. per Annum in the Amount of Production of Pig Iron, Iron Ore, and Steel in certain Countries, and Exports of Iron from the United Kingdom.

In most cases the years at the beginning and end of the periods for which the rates are calculated are the means of three successive years. See pp. 568—572 of text.

	1855 to 1860.	1860 to 1870.	1860 to 1869.	1873 to 1880.	1870 to 1880.	1880 to 1886.	1880 to 1887.	1880 to 1888.
<i>Austria-Hungary—</i>								
Production of pig iron	—	2'76 ^a	—	—	1'38	—	6'42	—
<i>Belgium—</i>								
Production of pig iron	—	5'94 ^a	—	—	dec.	—	4'45	—
<i>Denmark—</i>								
Production of pig iron	1'42	—	3'73 ^b	3'22	—	—	dec.	dec.
„ iron ore.....	—	—	—	0'21 ^c	—	dec.	—	—
<i>France—</i>								
Production of pig iron	—	—	11'02 ^b	3'62	—	—	5'93	6'25
„ iron ore.....	—	—	11'89 ^b	2'67	—	—	4'68	5'19
„ steel (Bessemer and open hearth)	—	—	—	15'01	—	—	13'69	—
<i>Germany—</i>								
Production of pig iron	—	6'07 ^d	—	—	5'16	—	3'69	4'13
„ iron ore.....	—	—	—	2'61	—	2'85	—	—
<i>Italy—</i>								
Production of pig iron	1'78 ^e	—	3'08 ^f	—	—	—	3'65 ^g	—
<i>Netherlands—</i>								
Production of pig iron	—	—	—	—	3'13	2'34	—	—
<i>United Kingdom—</i>								
Production of pig iron	2'65	4'83	—	—	1'95	—	0'31	1'05
„ iron ore.....	—	6'21	—	1'15	1'68	—	dec. ^h	dec.
„ steel	—	—	—	12'61	16'78 ⁱ	—	11'25 ^j	11'73 ^j
Export of iron and steel of all kinds	—	7'00	—	—	1'93	—	1'31	2'00
Export of pig and puddled iron	—	9'19	—	—	5'58	—	—	dec.
„ railroad iron and steel of all sorts	—	7'97	—	—	dec.	—	—	5'87
Export of tinned plate	—	7'24	—	—	7'61	—	—	7'52
<i>United States—</i>								
Production of pig iron	0'72	8'62	—	—	7'75	—	8'18	8'45
„ steel (all kinds)	—	—	—	31'38	32'74 ^k	—	12'87	12'43
<i>World—</i>								
Production of pig iron	—	4'74 ^l	—	—	3'61	—	3'66	4'08

^a From 1860 to mean 1870.

^b From 1860 to mean 1869.

^c Mean 1874 to mean 1880.

^d From the year 1860 in the case of Germany.

^e Year 1855 to year 1865.

^f Year 1865 to year 1875.

‡ Year 1877 to year 1887.

^hDecrease also from mean 1870 to mean 1887.

ⁱ Bessemer steel only.

^j Bessemer and open hearth.

^k Mean 1871-80.

¹Year 1850 to mean 1870.

TABLE X.

Increase in Aggregate Length of the Railway Systems of various Countries and of the World as a whole.

(Referred to on pp. 572—577 of text.)

A.

Year.	United Kingdom.				France.		Germany.		United States.	
	Double Lines counted as Two.		Double Lines counted as One.							
	Miles Open.	Differ- ence.	Miles Open.	Differ- ence.	Miles.	Differ- ence.	Miles.	Differ- ence.	Miles.	Differ- ence.
1888	30,584	969	19,812	643	—	—	—	—	157,000	29,271
'85	29,615	1,879	19,169	1,236	20,177	3,902	22,640	1,947	127,729	34,380
'80	27,736	2,180	17,933	1,275	16,275	2,746	20,693	3,317	93,349	19,253
'75	25,556	1,842	16,658	1,121	13,529	2,387	17,376	5,647	74,096	21,182
		(4 yrs. In 5 yrs. say 2,329)								
'71	23,714	2,922	—	—	—	—	—	—	—	—
		(6 yrs. In 5 yrs. say 2,435)								
'70	No re	turns	15,537 ^a	2,248	11,142	2,608	11,729	2,952	52,914	17,829
'65	20,792	3,669	13,289	2,856	8,534	2,834	8,777	1,798	35,085	4,450
'60	17,123	2,635	10,433	2,098	5,700	2,204	6,979	2,113	30,635	12,261
'55	14,488	—	8,335	1,835	3,496	1,782	4,866	1,229	18,374	9,353
'50	—	—	6,500	4,060	1,714	—	3,637	2,296	9,021	4,388
								10 yrs.		
'45	—	—	2,440	1,240	—	—	—	—	4,633	1,815
'40	—	—	1,200	—	—	—	341	—	2,818	—

^a Number of miles constructed.

B.—Railways of the United States by Groups of States.

Year.	New England. ^b		Middle States. ^c		Southern States. ^d		Western States. ^e		Pacific States. ^f	
	Miles.	Difference.	Miles.	Difference.	Miles.	Difference.	Miles.	Difference.	Miles.	Difference.
1888	6,654	672	20,483	4,613	25,633	10,822	95,210	42,382	9,020	5,053
'80	5,982	1,488	15,870	4,906	14,811	3,638	52,828	28,271	3,967	2,290
'70	4,494	834	10,964	4,258	11,173	2,335	24,557	13,157	1,677	1,654
'60	3,660	1,152	6,706	3,504	8,838	6,803	11,400	10,124	23	—
'50	2,508	1,981	3,202	1,636	2,035	1,399	1,276	1,187	—	—
'40	527	—	1,566	—	636	—	89	—	—	—

^b Maine, New Hampshire, Vermont, Massachusetts, Rhode Island, Connecticut.

^c New York, New Jersey, Pennsylvania, Delaware, Maryland and D.C., West Virginia.

^d Virginia, North Carolina, South Carolina, Georgia, Florida, Alabama, Mississippi, Louisiana, Tennessee, Kentucky.

^e Ohio, Michigan, Indiana, Illinois, Wisconsin, Minnesota, Dakota, Iowa, Nebraska, Kansas, Missouri, Indian Territory, Arkansas, Texas, Colorado, New Mexico, Wyoming, Idaho, Utah, Montana.

^f Nevada, Arizona, California, Oregon, Washington.

TABLE X—*Contd.*

C.

Year.	Russia.		India.		Australasia.		Argentine Republic and Uruguay.		Mexico.	
	Miles.	Difference.	Miles.	Difference.	Miles.	Difference.	Miles.	Difference.	Miles.	Difference.
1888	17,313	3,287	15,245 ^g	5,937	10,480	5,605	5,370	3,566	3,846	3,191
'80	14,026	6,928	9,308	4,533	4,875	3,925	1,804	1,106	655	440
'70	7,098	6,110	4,775	3,936	950	—	698	—	215	—
'60	988	678	839	818	—	—	—	—	—	—
'53	—	—	21	—	—	—	—	—	—	—
'50	310	—	—	—	—	—	—	—	—	—

g 31st March, 1889.

D.—*Railway Systems of Groups of Countries.*

Col. I. All the countries enumerated in the "Statistical Abstract for "Foreign Countries," No. 15, pp. 205 and 206, namely, Russia, Norway, Sweden, Denmark, Germany, Holland, Belgium, France, Switzerland, Portugal, Spain, Italy, Austria-Hungary, Roumania, Turkey in Europe, Greece, United States, Mexico, Peru, Chile, Brazil, Argentine Republic, Uruguay, Japan, and the United Kingdom.

Col. II. The same, with the addition of the colonial and other possessions of the United Kingdom, as given in the "Colonial Abstracts."

Col. III. The same as Col. II, with the addition of the railways of Egypt, Algeria, the Senegal region, Angola, Réunion, Asia Minor, Cochin China, Cuba, Central America, Ecuador, and Paraguay, from the last issue of Neumann-Spallart's "Uebersichten der Weltwirthschaft."

Col. IV. The same as Col. III, with the omission of the railways of Germany, Holland, Belgium, France, Switzerland, Austria-Hungary, and the United States.

Year.	I.		II.		III.		IV.	
	Miles.	Difference.	Miles.	Difference.	Miles.	Difference.	Miles.	Difference.
1885....	262,001	60,811	294,872	71,301	301,135	117,726	110,682	47,035
'80....	201,190	33,901	223,571	42,642	—	—	—	—
'75....	167,289	47,235	180,929	—	183,409	93,733	63,647	32,719
'70....	120,054	37,481	—	—	—	—	—	—
'65....	82,573	19,920	88,682	—	89,666	—	30,928	—
'60....	62,653	23,454	—	—	—	—	—	—
'55....	39,199	15,961	—	—	—	—	—	—
'50....	23,238	18,989	—	—	—	—	—	—
'40....	4,249	—	—	—	—	—	—	—

TABLE XIII.—*Average Rate of Increase per Cent. per Annum of Imports of certain Raw Materials, and Exports of Products of Textile Manufactures (by Quantities).*

The first and last years of the periods are the means of three successive years.
(See text, p. 579.)

	1860 to 1870.	1870 to 1880.	1873 to 1880.	1880 to 1886.	1880 to 1887.	1880 to 1888.	
<i>Net Imports after Deduction of Exports.</i>							
Raw cotton into France	—	—	3'60	2'85	—	—	
„ Germany	—	—	1'68	—	4'37	—	
„ Italy	—	9'75	6'02	—	10'7	—	
„ Russia	—	6'98	7'64	3'90	—	—	
„ the United Kingdom.....	0'96	1'84	1'48	0'37	0'97	1'21	
Raw wool into the United Kingdom.....	4'76	1'56	0'51	—	—	5'66	
<i>Exports from the United Kingdom.</i>							
Cotton piece goods	1'92	3'13	—	—	—	1'76	'60-80
„ yarn	Dec.	2'56	—	—	—	0'91	1'10
Woollen and worsted manu- factures	5'77	Dec.	—	—	—	0'50	'60-80 1'81
Woollen and worsted yarn....	4'49	„	—	—	—	4'55	'60-80 0'89
Linen and jute piece goods....	7'33	2'49	—	—	—	2'31	'60-80
„ yarn	4'30	Dec.	—	—	—	1'17	0'37
Silk manufactures	5'48*	4'20	—	—	3'06	—	

* Mean 1863 to mean 1870.

TABLE XIV.—*Export of Cotton Yarn, in Thousands of lbs., to China, Hong Kong, and Japan, from the United Kingdom and British India.*

(See p. 579 of text.)

Year.*	From the United Kingdom.	From British India.	Year.*	From the United Kingdom.	From British India.
1866	5,938	—	1878	36,468	21,334
'67	12,702	—	'79	38,952	25,862
'68	10,905	—	'80	46,426	26,901
'69	11,893	—	'81	47,479	30,786
'70	21,102	—	'82	34,371	45,223
'71	19,146	—	'83	33,500	49,877
'72	21,675	—	'84	38,856	65,897
'73	17,554	—	'85	33,061	78,238
'74	22,348	—	'86	26,924	91,803
'75	29,369	—	'87	35,354	109,964
'76	29,838	7,927	'88	44,643	124,391
'77	33,087	15,600	'89	35,720	136,850

* In the case of British India the year ending the 31st of March following.

TABLE XV.—*Tonnage employed in Exporting Coal from the United Kingdom.**

(See p. 582 of text.)

Average of Years.	Coal Exported. Millions of Tons.		Millions of Tons cleared from British Ports with Cargoes (Foreign and Colonial Trade).		Percentage of Tonnage required for Coal.
	Weight.	Tonnage required for Shipment.	Total.	Exclusive of Coal.	
1854-60.....	6'1	4'1	9'6	5'5	42'7
'61-65.....	8'5	5'6	12'0	6'4	46'7
'66-70.....	10'7	7'2	15'4	8'2	46'8
'71-75.....	13'4	8'9	19'5	10'6	45'6
'76-80.....	16'5	11'0	22'5	11'5	48'9
'81-85.....	22'1	14'7	28'5	13'8	51'6
'86-89.....	25'9	17'3	31'0	13'7	55'8

* Based on table in Sir Rawson Rawson's "Sequel to Synopsis of the Tariffs and Trade of the British Empire."

TABLE XVI.—*Average Yield per Acre of Maize in the States and Territories of the United States in the Periods 1870-79 and 1879-88.*

(See p. 576 of text.)

States and Territories.	Yield per Acre. Bushels.		States and Territories.	Yield per Acre. Bushels.	
	1870-79.*	1879-88.†		1870-79.*	1879-88.†
Maine	31'5	33'9	Ohio	35'9	31'7
New Hampshire..	38'0	34'1	Michigan	33'4	30'9
Vermont	37'3	34'3	Indiana	32'5	29'3
Massachusetts ...	34'7	32'1	Illinois	29'7	26'3
Rhode Island ...	29'2	30'3	Wisconsin	33'2	29'1
Connecticut	29'8	29'7	Minnesota	32'6	30'8
New York	33'0	30'5	Iowa	34'1	30'2
„ Jersey	36'2	31'1	Missouri.....	30'2	27'0
Pennsylvania ...	35'6	31'7	Kansas	34'4	28'3
Delaware	23'2	20'8	Nebraska	36'9	32'7
Maryland	25'1	25'0	California	33'7	28'5
Virginia.....	20'0	17'1	Oregon	29'4	26'0
North Carolina...	14'7	12'7	Nevada	30'5‡	24'6
South „	9'3	9'0	Colorado	28'7	27'7
Georgia	11'1	10'4	Arizona		20'9
Florida	10'2	9'4	Dakota		27'5
Alabama	13'8	12'5	Idaho		23'2
Mississippi	15'4	14'2	Montana		26'2
Louisiana	17'4	16'3	New Mexico		20'1
Texas.....	21'5	18'0	Utah		22'5
Arkansas	24'3	20'2	Washington		25'7
Tennessee	23'3	20'6	Wyoming		—
West Virginia ...	28'3	24'2			
Kentucky	29'6	23'8	United States ...	27'1	24'2

* Kindly furnished to me by Mr. J. R. Dodge, Statistician to the United States Department of Agriculture.

† From the "Album of Agricultural Statistics" (Washington, 1889).

‡ 1870-76.

DISCUSSION *on* MR. CHISHOLM'S PAPER.

THE PRESIDENT said they were very much indebted to Mr. Chisholm for having brought this important subject under their notice, for the careful manner in which he had prepared the paper, and for the valuable tables with which he had illustrated it.

MR. J. STEPHEN JEANS said the paper undoubtedly opened up a very wide field for discussion from many different points of view. The general impression that he thought was likely to be conveyed by a study of the paper was one of a two-fold character. It seemed as if the author looked forward to a gradual decrease of the rate of production of the coalfields of the United Kingdom, and an increase of the rate of production of the coalfields of other countries. So far as that opinion was based upon available data, he thought it was quite reasonable, but it was a mistake to suppose that the coalfields of this country were so near exhaustion as some people thought. Every now and then there were discoveries of new coalfields, and he happened to be familiar with some cases where borings had been made with successful results. He would not pin his faith to the results arrived at by the Argyll Commission of 1866. No doubt they were correct at that time, but they must now be taken with limitations. The description of coal which he believed was nearer exhaustion than any other was that on which unfortunately our iron industry very much depended. In 1877 he had occasion to inquire into the matter, and his conclusions were confirmed by another gentleman almost to a year, that the probable duration of the coking coal deposits of the South Durham coalfields was about one hundred and twenty years. In America, on the other hand, they had enormous supplies of available coking coal; and in the course of conversation with Mr. Andrew Carnegie only three or four days ago, that gentleman, who produced something like 15,000 tons of coal per day, told him that considerable quantities of coke had been produced in Pennsylvania at something under a dollar a ton, which was a price that was hardly known in England. The writer of the paper attached more importance to the coalfields of China than he (Mr. Jeans) was disposed to do. He had taken pains to inform himself about the matter, and he doubted whether there were much really reliable data available with regard to the coal supplies of that country. That they were enormous was, however, beyond question, and in time he thought they might be largely developed, but the whole country must first be opened up to a much greater extent than at present. At the present moment there were hardly any roads in China, almost the only means of transport being by water, so that the period of opening up the coalfields in the interior must be rather remote. The paper referred incidentally

to the subject of the extension of railways in China, but personally he was not sanguine that there would be any considerable extension in that direction within a period of time that need be taken into consideration at the present moment. A very large proportion of the population of China was likely to be opposed to the laying down of railways in that country. So far as the iron trade was affected by extensions of railways in other countries, he believed there was ground for hope. On one point he rather took issue with the writer of the paper, who seemed to think it would be a good thing for this country when the colonies manufactured for themselves. His opinion was that such a state of things would not be to the advantage either of the mother country or the colonies. It must not be forgotten that we were increasingly dependent on them for our food supplies, and if they failed to take our manufactures we should have nothing to offer them in exchange. Probably they would in the future make iron for themselves, but that event was still rather remote. The author had ingeniously speculated as to what would have been the output of our coal if it had not been for the protective policies of other countries, but his impression was that if the coal resources of this country had been developed to the point indicated by the author, it would only have been as the result of the extension of our manufactures, and that could hardly be considered a bad thing. He believed that the Royal Commissioners of 1866 attributed to the iron industry a consumption of something like 35 per cent. of the total consumption of coal raised in this country. Since then he thought the proportion had rather diminished; still it was a most important source of consumption, and he did not doubt that it was likely to continue so. Although not improving her position to the same extent as some other countries, England still occupied her old pre-eminence in reference to the manufacture of pig iron, which on the whole we produced more cheaply than any other country.

Mr. H. MONCREIFF PAUL said that although at the present time the Australasian colonies were very small producers of coal, it was necessary to keep in view the importance of an increase there. If we as a nation were to maintain our supremacy in the southern seas, it was needful to have supplies of coal at hand, both for the mercantile marine and for our ships of war. At present, as the tables in the appendix to Mr. Chisholm's paper showed, the Australasian colonies contributed a very small proportion to the world's annual production, which might be taken as 450 or 460 million tons. Towards that quantity Australasia, including New Zealand, contributed only 4,200,000 tons. In New South Wales there was an area of carboniferous strata approximately six times greater than that of Great Britain, and yet while Great Britain turned out annually some 177 million tons, New South Wales turned out less than $3\frac{1}{4}$ million tons. Still the coal was *there*, and could be used when occasion required. In New Zealand also there was one mine, the Rochford Mine in the Nelson Province, which was estimated to contain some 140 million tons of coal.

The coal then being there, how could it best be utilised in the future? Mr. Chisholm had very properly shown that in the development of railways the increase in the production of coal was very much involved. In 1870 there were in Australasia only 948 miles of railway opened, but in 1889 there were more than 10,000 miles, the whole railways of the United Kingdom being about 19,500 miles, and in the British possessions upwards of 58,000 miles. The same rate of increase could not be looked for in future years, but it might certainly be expected that there would be a very great increase beyond the present condition of things. There was in the Australasian colonies an area of over 3 million square miles to be populated. At present the population was very little over one to the square mile; and therefore there must be in the future a development of the coal production coincident with the growth of the population. With reference to the idea expressed by Mr. Chisholm that it would be a very good thing if there was a development of the iron smelting industry in New South Wales, a vast deal must be done before that or any other Australian colony could supply their own wants with regard to iron or steel. The author of the paper seemed to fancy that the key note to the development of railways was the production of wheat. He (Mr. Paul) was not quite sure that they ought to pin their faith to that. There might be many other articles of produce which would be the means of supporting railways. He never looked upon the Australasian colonies as being likely to be great wheat producing countries; still they might produce more than at present. While irrigation there was in its infancy, it had been successfully carried out in Victoria. There were schemes before the Government of New South Wales also which would in time lead to the development of railways and to an increase of population. What was wanted was facilities for emigration thither—which would lead to the increase of population, the development of railways, the production of coal, and the opening up of the country to intending settlers. Unless these colonies offered such facilities for immigration, their development and progress would be greatly retarded.

Mr. JOHN GLOVER regarded the paper as in some respects a completion of what statistical people had to say on the subject of coal. Mr. Jevons had something to say, and that did a great deal of mischief. It was largely responsible for the coal famine, as it was called. There never was any such famine, but there was a famine price, shortly followed by a price as low as before the alleged famine, showing that there had been no cause for anxiety. Mr. Chisholm had committed himself to the positive statement that we need be under no apprehension about the exhaustion of the coal measures in England, because influences had come into operation in other countries which diminished the pressure on our resources. What the paper amounted to was this, that in the matter of coal, as in so many other things, the English had been the pioneers in its use, and other nations were just beginning to learn the secret which our success had taught them. Statisticians should avoid hysterical statements, and he hoped that this admirable

paper would have a very calming effect. The present price of coal was 50 per cent. higher than it was a few months ago at the pit's mouth at such places as Cardiff, Newcastle, &c. So far as he knew there was very little reason for this increase. It had taken centuries for the coal industry to attain its present position in England, and it would be a very long time before the coal region of China alluded to in the paper could be properly utilised. He thought there were two or three passages in the paper which were a little misleading, in which the question of geometrical increase was introduced. It did not follow that because we were not increasing at the same geometrical rate as in former years, therefore we were not maintaining a great increase; and of course in the case of States which had only comparatively recently begun to use coal, the percentage of the rate of increase looked a great deal more than in England. He was glad to hear that there was a distinct prospect of the pressure from foreign countries on our coal supplies undergoing a somewhat very appreciable reduction. That England should be supplying coal for driving railways in every part of the world he only regarded as a provisional arrangement. He could not imagine from what source Mr. Chisholm had derived the idea that there was a possibility of there not being increased facilities at our ports for progressive growth in the export of coal. Our railway and port facilities were not merely adequate, but far in excess of the demand for such facilities. With our present shipping arrangements we could indefinitely increase our export were it necessary. From Cardiff alone there were exported 250,000 tons of coal last week, and the facilities afforded by that port were not yet exhausted. With regard to an export duty he did not think anybody contemplated putting it on. The magnificent prospect which had been described for China was a matter on which they could look not only with the greatest complacency, but with the profoundest satisfaction. The consumption of coal by such an enormous population as the Chinese would react beneficially on the whole world.

Mr. ROWLAND HAMILTON said that he spent some years in China, and was very strongly impressed with the great capacity of the Chinese for any work that they saw their way to enter upon. The misery and suffering that had been endured by a great part of China during the present century, was greatly beyond anything known in Europe even during the wars of the middle ages, but still the industrial character of the nation survived. China had been occupied for ages, and complicated rights in land had arisen, so that the construction of a railway through the country would be certain not only to run counter to existing prejudices, but to involve troubles and inflict hardships on some portion of the population. The Chinese Government, which was theoretically a very considerate government in matters of that kind, would be naturally very loth to give power for the construction of railways to any foreign body which could not deal with such difficulties as these with due knowledge and discretion. He did not think there was any nation that had a greater capacity for trade on a large scale

than the Chinese. The system of canals which was widely extended over the country, had also accustomed the people to earthworks on a large scale. As it was in this country, the labour trained for "inland navigation" works (canals), afforded the "navvies" who worked so efficiently on the railways which succeeded them; so it may be in China. He thought the Chinese would take their own time, and keep the control of their railways in their own hands. It was also probable that they would make their railways more for the benefit of their internal than their external traffic, and that the exigencies of war with their neighbours to the north would occupy a large portion of their attention.

Mr. T. FREEMAN thought that the Statistical Society should be very cautious not to give the initiative to anything like panic in connection with our coal supply, and the tendency of the paper which had been read was not in that direction. In the North Staffordshire district, from which he came, they were now working deep seams of coal that had not previously been mined. In South Staffordshire seams that had been flooded out for many years would now probably be worked through a new system of pumping and drainage. For many years coal had actually been sold at a less price than the cost of production, hence until latterly there had been little or no development. In a letter he sent to the "Times" the year before last, he stated broadly from statistics he had been able to get together, that coal owners had not realized 3 per cent. on their capital during the previous five years. Through advances in wages and stores in an extraordinary and unnatural way, coal masters were now actually receiving inadequate return for their labour risks and capital invested. It seemed to him that one of the most important points in the paper came under the head of "proposed preventives of the too rapid consumption of coal." There was a fearful amount of waste in coal arising from the crude manner in which it was dealt with at the pit's mouth, and the loss of its gaseous qualities by rough treatment in the trucks and its exposure to weather sometimes for weeks together. He unhesitatingly said there was a depreciation of one-third in the value of the coal between its condition when it reached the bank and the time when it reached the consumers' fires. He believed the time was not far distant when instead of coal being dealt with in this barbaric way, something would be done to prevent this fearful waste of coal by breakage and damage between the pit's mouth and the consumers' cellars. Why should not all coal be sent to London in sacks? When coal was cheap there was great extravagance in its consumption, not especially in our manufactories. Now that coal was getting dearer, people were beginning to save considerably in quantity consumed in boiler heating and in manufacturing purposes, so that he thought there was every reason to believe that the economical point that had been so ably touched upon would receive more consideration.

Sir R. W. RAWSON said that for the last two months the average price of coal exported had been 12s. 11d. and 13s. a ton, but he

thought he was correct in saying that two or three years ago it was 6s. 8d.

Mr. CHISHOLM, in reply, expressed his hearty thanks for the manner in which his paper had been received, and his gratification at the sense of the importance of the subject which had been shown by more than one of the speakers. He was specially gratified also that he had had the benefit of observations from those who were practically acquainted with coal and iron. Of course he had only treated the subject from the point of view of the statistician, and he was glad to get practical information which might enable him to qualify the views he had expressed. He was afraid that he had not expressed his views with the clearness that he could have wished, because he apprehended that his paper had not been interpreted by everyone in the manner in which he hoped it would be interpreted. For instance, even the difference between Mr. Jeans and himself was perhaps not so great as that gentleman seemed to imagine. He had been looking at the distant future, whereas Mr. Jeans had been under the impression that he had been considering rapid changes that might be anticipated within no long time. So far from having expressed the idea that the coalfields of Great Britain were nearer exhaustion, he went the length of stating his conviction that they would never be exhausted; in fact the whole drift of his paper had been to act rather in the direction of calming apprehension as to the exhaustion of our coalfields. Any change would probably be very gradual, and that was a more desirable thing than a rapid decline of our own industries, suddenly followed by a corresponding rise in other countries. He had pointed to a decrease of the coal production in this country only as a probability in an indefinite future. He had made no calculation from the estimate made by the Coal Commission as to the extent of our coal supply, for he did not think it possible to make any calculation as to the time our coal would last. The rate of increase or decrease of our coal production in the future must depend on too many uncertain factors to allow of any such calculation. What was to be anticipated in the immediate future was not a diminution in the rate of production, but, at the most, a diminution in the rate of increase of the production, such as there was in the period between the mean of the three years 1879-81 and that of the three years 1887-89, as compared with the period between the mean of the three years 1869-71 and that of the three years 1879-81. The whole aim of the paper was not to create any panic, but rather to point out that any change in the amount of our coal production would probably be a very gradual one] indeed. Mr. Glover said that he made too much of the geometrical rate of increase. The coal question had been so discussed by Jevons, Professor Marshall, and Mr. Price-Williams. Estimates had been formed as to the date when the coalfields of the United Kingdom would be exhausted on the assumption of a certain rate of increase of production being maintained for an indefinite period. He (Mr. Chisholm) had applied that method to foreign countries in order to see if the study of those countries

would affect their estimate of the geometrical rate of increase of production in this country. It seemed to him it would affect it. Mr. Glover said that a high rate of increase in this country meant a great deal more than even a higher rate of increase in a country with a much smaller coal production. There was a very large amount of truth in that, but it was important to see the exact nature and amount of truth which the statement contained. The idea was that an equally high rate of increase was not to be expected for a large as for a small aggregate production. It must be remembered that every whole was made up of its parts. The aggregate coal production of the United Kingdom was the sum of the production of its pits. The average rate of production of Great Britain was made up of the average of the coal production of the different pits, that is to say it was higher than in some of these smaller aggregates, though lower than in others. The rate of increase of the iron production of the world had within recent periods been greater than in Great Britain. What was true was that within a given area, when once adequately peopled, it became increasingly difficult to maintain a high rate of increase of production. In the wide area of the United States, where the increase of coal production still went on, so to speak, expansively, that is where coalfields were steadily being opened up in new regions, the rate of increase was greater than in Germany, even though the total amount of the production was also much greater. Various other points of interest and importance had been touched on by different speakers, but time was up, and he (Mr. Chisholm) would not trespass on the patience of the members any longer.

*"Some ASPECTS of COMPETITION." The ADDRESS of the PRESIDENT
of SECTION F—ECONOMIC SCIENCE and STATISTICS—of the BRITISH
ASSOCIATION, at the SIXTIETH MEETING, held at LEEDS, in
SEPTEMBER, 1890.*

By ALFRED MARSHALL.

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I.—*Limitation of the scope of the Paper to a study of some forms of Competition in Commerce, and of changes in the mental attitude of Economists with regard to it.*

I UNDERSTAND that the function of an Opening Address to a Section of the British Association, is to give an account of the advances made in some part of the field of study with which that Section is specially concerned. The part of our field to which I would direct your attention to-day is the action of competition. We cannot, in the short space of time allotted to us, make an adequate study of the progress that has been made even in this part of our field; but we may be able to go some way towards ascertaining the character of the changes that are going on in our own time in the mode of action of competition, and in the attitude of economists towards it.

I do not propose to speak of changes in the moral sentiments of economists with regard to competition—though these, also, are significant in their way—but of changes in their mental attitude towards it, and in the way in which they analyse and reason about its methods of action. And partly for this reason, partly on account of the limitation of the time at my disposal, I propose to confine my remarks to some aspects of competition in commerce, and not to enter upon the subject of competition and combination in the buying and selling of labour. For in relation to that subject, the change in the moral attitude of economists is in some ways more marked and more important than that in their mental attitude; and it is therefore not so well fitted as that of competition and combination in commerce to illustrate the change in the methods of economic science to which I would invite your attention.

The abandonment of Dogma; the development of Analysis.

The change may, perhaps, best be regarded as a passing onward from that early stage in the development of scientific method, in which the operations of Nature are represented as conventionally simplified for the purpose of enabling them to be described in short and easy sentences, to that higher stage in which they are studied more carefully, and represented more nearly as they are, even at the expense of some loss of simplicity and definiteness, and even apparent lucidity. To put the same thing in more familiar words, the English economists of fifty years ago were gratified, rather than otherwise, when some faithful henchman, or henchwoman, undertook to set forth their doctrines in the form of a catechism or creed; and the economists of to-day

abhor creeds and catechisms. Such things are now left for the Socialists.

It has, indeed, been an unfortunate thing for the reputation of the older economists, that many of the conditions of England at the beginning of this century were exceptional, some being transitional, and others, even at the time, peculiar to England. Their knowledge of facts was, on the average, probably quite as thorough as that of the leading economists of England or Germany to-day, though their range was narrow. Their thoroughness was their own, the narrowness of their range belonged to their age; and though each of them knew a great deal, their aggregate knowledge was not much greater than that of any one of them, because there were so few of them, and they were so very well agreed. In these matters we economists of to-day have the advantage over them.

Their agreement with one another made them confident; the want of a strong opposition made them dogmatic; the necessity of making themselves intelligible to the multitude made them suppress even such conditioning and qualifying clauses as they had in their own minds: and thus, although their doctrines contained more that was true, and new, and important than those promulgated by almost any other set of men that have ever lived—doctrines for which they will be gratefully remembered as long as the history of our century retains any interest—yet, still, these doctrines were so narrow and inelastic that, when they were applied under conditions of time and place different from those in which they had their origin, their faults became obvious and created a reaction.

Perhaps the greatest danger of our age is that this reaction may be carried too far, and that the great truths which lie embedded in these too large utterances may be neglected because they are not new, and we are a little tired of them: and because they are associated with much that is not true, and which has become, not altogether unjustly, repugnant to our sentiments.

I propose to illustrate this danger chiefly by reference to that point at which it assumes its gravest form just at present, viz., the relations between competition and combination in domestic trade. But the relations between Protection and Free Trade in foreign commerce have a longer and more fully developed history; and I will begin by referring briefly to them because they throw a clear light both on recent changes in economic thought, and on the warnings which the experience of our forefathers, in dealing with the problems of their age, gives us with reference to those problems which are more specially ours.

II.—*First illustration. The policy of Protection.*

Englishmen used to underrate the differences between the influences of Foreign Trade on an Old and a New Country.

It is a constant source of wonder to Englishmen that Protection survives and thrives, in spite of the complete refutations of Protectionist arguments with which English economists have been ready to supply the rest of the world for the last fifty years or more. I believe that these refutations failed chiefly because some of them implicitly assumed that whatever was true as regards England, was universally true; and if they referred at all to any of the points of difference between England and other countries, it was only to put them impatiently aside, without a real answer to the arguments based on them. And further, because it was clearly to the interests of England that her manufactures should be admitted free by other countries, therefore, any Englishman who attempted to point out that there was some force in some of the arguments which were adduced in favour of Protection in other countries, was denounced as unpatriotic. Public opinion in England acted like the savage monarch who puts to death the messenger that comes running in haste to tell him how his foes are advancing on him; and when John Stuart Mill ventured to tell the English people that some arguments for Protection in new countries were scientifically valid, his friends spoke of it in anger—but more in sorrow than in anger—as his one sad departure from the sound principles of economic rectitude. But killing the messengers did not kill the hostile troops of which the messengers brought record; and the arguments which the Englishmen refused to hear, and therefore never properly refuted, were for that very reason those on which Protectionists relied for raising a prejudice in the minds of intelligent and public-spirited Americans against the scientific soundness and even the moral honesty of English economics.

The first great difficulty which English economists had, in addressing themselves to the problems of cosmopolitan economics, arose from the fact that England was an old country—older than America in every sense, and older than the other countries of Europe in this sense, that she had accepted the ideas of the new and coming industrial age more fully and earlier than they had. In speaking of England, therefore, they drifted into the habit of using, as convertible, the two phrases—"the commodities which a country can now produce most easily," and "the commodities which a country has the greatest natural advantages for producing," that is, will always be able to produce most easily. But these two phrases were not approximately convertible when

applied to other countries; and when List and Carey tried to call attention to this fact, Englishmen did little more than repeat old arguments, which implicitly assumed that New England's inability to produce cheap calico had the same foundation in natural laws as her inability to produce cheap oranges. They refused fairly to meet the objection that arguments which prove that nothing but good can come from a constant interchange of goods between temperate and tropical regions, do not prove that it is for the interest of the world that the artisans who are fed on American grain and meat should continue always to work up American cotton for American use three thousand miles away. Finding that their case was not fairly met, the Protectionists naturally thought it stronger than it was, and honestly exaggerated it in every way. One of my most vivid recollections of a visit I made, in 1875, to study American Protection on the spot, is that of Mr. Carey's splendid anger, as he exclaimed that foreign commerce had made even the railways of America run from east to west, rather than from north to south.

Difficulties of American manufacturers fifty years ago.

England had passed through the stage of having to import her teachers from other lands. But her genius for freedom had attracted to her shores the pick of the skilled artisans of the world; she had received the best lessons from the best instructors, and seldom paid them any fee, beyond a safe harbour from political and religious persecution. And modern Englishmen could not realise, as Americans and even Germans could fifty years ago, the difficulties of a manufacturer taking part in starting a new industry, when he came to England to beg or steal a knowledge of the trade, and to induce skilful artisans to come back with him. He seldom got the very best; for they were sure of a comfortable life at home, and were perhaps not without some ambition of rising to be masters themselves. He had to pay their travelling expenses, and to promise them very high wages; and when all was done, they often left him to become the owners of the 160 acres allotted to every free settler; or, the bitterest pill of all, they sold their skill to a neighbouring employer who had been looking on at the experiment, and, as soon as it showed signs of prosperity, stepped in, improved on the first experiments, and reaped a full harvest on a soil that had been made ready by others.

Again, the pioneer manufacturer had to bring over specialised machinery, and specialised skill to take care of it. If any part went wrong, or was superseded, the change cost him ten times as much as his English competitor. He had to be self-sufficing: he could get no help from the multitude of subsidiary industries,

which in England would have lent him aid at every turn. He had a hundred pitfalls on every side: if he failed, his failure was full of lessons to those who came after; if he succeeded, the profits to himself would be trivial, as compared with those to his country. When he told the tale of his struggles, every word went home to his hearers; and when the English economists, instead of setting themselves to discover the best method by which his country might help him in his experiment, said he was flying in the face of Nature, and called him a selfish schemer for wanting any help at all, they put themselves out of court.

The Action of the Laws of Diminishing and Increasing Return intensifies the evils of Protection in England, but lessens them in America.

But the failure of English economists to allow for the special circumstances of new countries did not end here. They saw that Protective taxes in England had raised the price of wheat by their full amount (because the production of wheat obeys the Law of Diminishing Return; *i.e.* increased supplies can be raised in an old country, such as England, only at a more than proportionately increased cost of labour); that the high price of bread had kept a large part of the population on insufficient rations; that it had enriched the rich at the expense of a much greater loss to the rest of the nation; and that this loss had fallen upon those who were unable to lose material wealth without also losing physical, and even mental and moral strength; and that even those miseries of the overworked factory women and children, which some recent German writers have ascribed exclusively to recklessness of manufacturing competition in its ignorant youth, were really caused chiefly by the want of freedom for the entry of food. They were convinced, rightly, as I believe, that the benefits claimed for Protection in England were based, without exception, on false reasoning; and they fought against it with the honest, but also rather blind, energy of a religious zeal.

Thus they overlooked the fact that many of those indirect effects of Protection which aggravated then, and would aggravate now, its direct evils in England, worked in the opposite direction in America. For, firstly, the more America exported her raw produce in return for manufacture, the less the benefit she got from the Law of Increasing Return (*i.e.* that manufacture on a large scale is more economical than on a small); and thus her case was contrasted with England, who could manufacture more cheaply for her own use the more of her manufactures she sent abroad; and for this and other reasons, a Protective tax did not nearly always raise the cost of goods to the American consumer by

its full amount. And, secondly, Protection in America did not, as in England, tax the industrial classes for the benefit of the wealthy class of landlords. On the contrary, in so far as it fell upon the exporters of American produce, it pressed on those who had received large free gifts of public land; and there was no *prima facie* injustice in awarding to the artisans, by special taxation, a small part of the fruits of that land, the direct ownership of which had not been divided between farmers and artisans, as it equitably might have been, but had been given exclusively to the former.

General conclusions as to Protection.

I have touched on but a few out of many aspects of the problem. But perhaps I may stop here, and yet venture to express my own opinion on the controversy. It is, that fifty years ago it might possibly have been not beyond the powers of human ingenuity to devise schemes of Protection which would, on the whole, be beneficial to America, at all events, if one regarded only its economic and neglected its moral effects; but that the balance has turned strongly against Protection long ago. In 1875 I went to America to study the problem of Protection on the spot. I discussed the Protective policy with several of its leading advocates, I visited factories in almost every first-class city, and compared as well as I could the condition of the workers there with that of similar workers at home, and I walked up and down some of the streets of nearly all the chief American cities, and said to myself as I went: "The adoption of Free Trade, so soon as its first disturbances were over, would strengthen this firm and weaken that;" and I tried to strike a rough balance of the good and evil effects of such a change on the non-agricultural population. On the whole it seemed to me that the two were about equally balanced, and that the abandonment of Protection would injure the lower rather than the higher classes of manufacturing industries; that those metal and wood trades, for instance, which give the best scope for the special genius of the native American artisan would gain by the change. Taking account therefore of the political corruption which necessarily results from struggles about the tariff in a democratic country, and taking account also of the interests of the agricultural classes, I settled in my own mind the question as to which I had had some doubt till I went to America, and decided that, if an American, I should unhesitatingly vote for Free Trade. Since that time the advantages of Protection in America have steadily diminished, and those of Free Trade have increased; I can see no force in Professor Patten's new defence of Protection as a permanent policy. I have already implied that I

believe that many of those arguments that tell in favour of Protection as regards a new country tell against it as regards an old one. Especially for England a Protective policy would, I believe, be an unmixed and grievous evil.¹

In Economic discussions absolute frankness is in the long run the best Policy.

But this expression of my own opinion is a digression. My present purpose in discussing Protection is to argue that, if the earlier English economists had from the first studied the conditions of other countries more carefully, and abandoned those positions that were at all weak, they could have retained the controversy with their opponents within those regions where they had a solid advantage. They would thus have got a more careful hearing when they claimed that, even though labour migrated more freely between the west and the east of America than between England and America, yet it was unwise to spend so much trouble on protecting the nascent industries of the East against those of England, and none on protecting the nascent industries of the West against those of the East; or, again, when they urged that the younger an industry was, and the more deeply it needed help, the more exclusively would its claims have to stand on its own merits, while its older and sturdier brothers could supplement their arguments by a voting power which even the most honest politicians had to respect, and by a power of corruption which would tend to make politics dishonest.

Had the English economists been more careful and more many-sided, they would have gradually built up a prestige for honesty and frankness, as well as for scientific thoroughness, which would have inclined the popular ear to their favour, even when their arguments were difficult to follow. Intellectual thoroughness and sincerity is its own reward; but it is also a prudent policy when the people at large have to be convinced of

¹ P.S.—I do not include under the head of a Protective policy any of the many ingenious schemes that have been propounded for "Retaliation" on those countries that impose high duties on imports from England, or for taxing imports from foreign countries, in order to be able to allow some differential advantage to the goods of our colonies, on condition that they grant corresponding advantages to English goods. It is true that many of these schemes have been advocated by arguments of a most unscientific character, such as find their proper place only in the crudest forms of Protectionism. But it is not necessary to base their claims on arguments of this kind. Arguments of some force can be given for the belief that some of these schemes, if they could practically be carried out under certain conditions, might on the whole do a little more good than harm to England. But there seems at present to be no probability that the proposed conditions will be realized in practice.

the advisability of a course of action against which such plausible fallacies can be urged as that "Protection increases the employment of domestic industries," or that "it is needed to enable a country in which the rate of wages is generally high to carry on trade with another in which it is generally low." The arguments by which such fallacies can be opposed have an almost mathematical cogency, and will convince, even against his will, any one who is properly trained for such reasonings. But the real nature of foreign trade is so much disguised by the monetary transactions in which it is enveloped, that a clever sophist has a hundred opportunities of throwing dust in the eyes of ordinary people, and especially the working classes, when urging the claims of Protection as affording a short cut to national prosperity; and, to crown all, he contrasts America's prosperity with English prophecies of the ruin that Protection would bring on her.²

It is true that Ricardo himself, and some of those who worked with him, were incapable of supposing that a doctrine can be made more patriotic by being made less true; and, so far as their limits went, they examined the good and evil of any proposed course, and weighed the good and evil against one another in that calm spirit of submissive interrogation with which the chemist weighs his materials in his laboratory. But they were very few in number, and their range of inquiry was somewhat narrow, while many of those Englishmen who were most eager to spread Free Trade doctrines abroad had not the pure scientific temper.

Now at length, however, there seems to be the dawn of a

² P.S.—Some of these prophecies have been repeated with reference to the recent McKinley Bill. But even if all the rest of the world were submerged under the ocean, the United States, without any foreign trade at all, would remain a great and a prosperous nation; and even though it be true—as I myself think it is—that the Act is a part of a policy which is on the whole mischievous to America, and is itself a mistake; and though the plans which it adopts for promoting the growth of American tin plate, lace, &c., industries do not seem to be the best possible; and though their good effects for America will probably be outweighed by much greater evils, yet those good effects can scarcely fail to be very important. On the other hand an old fallacy has reappeared in a new form in an argument, which has attracted much attention both here and in America, that the Act must have benefited America, because it has led to the investment of a few hundred thousand pounds of English capital in starting tin plate and lace works, &c., in America. Protection always puts capital into some industries: that movement "is seen;" but, before we can regard it as a net gain, we must make sure that there is not an equal or greater, though "unseen" leaking of capital out of other industries which the new tariff indirectly injures; and for every hundred thousand pounds that the Protection policy causes to be sent from England to be invested in American factories, it probably keeps away at least a million pounds that would otherwise have been sent there to be invested in railways and agriculture. And indeed the adoption of free trade by America would probably give a great stimulus to the immigration of English capital and labour to avail themselves of America's vast natural resources for almost every branch of industry.

brighter day in the growth of large numbers of many-sided students in England and other countries, and notably in America itself, where the problems of Protection can be studied to most advantage—students who are not, indeed, without opinions as to what course it is most expedient to follow practically, but who are free from party bias, and have the true scientific delight in ascertaining a new fact or developing a new argument, simply because they believe it to be new and true, and who welcome it equally whether it tells for or against the practical conclusion which, on the whole, they are inclined to support.

III.—*Second illustration. Trusts and other forms of Combination.*

But I must leave the subject of competition from outside a nation and pass to that of competition within. Here the past counts for less, the present and the future have to work for themselves without very much direct aid from experience. For, rapid as are the changes which the last few years have seen in the conditions of foreign trade, those which are taking place in the relations of different groups of industry within a country are more rapid still and more fundamental. The whirligig of Time brings its revenges. It was to England's sagacity and good fortune in seizing hold of those industries in which the Law of Increasing Return applies most strongly, that she owed in a great measure her leading position in commerce and industry. Time's revenge was that that very Law of Increasing Return furnished the chief motives to other countries, and especially America, to restrict their commerce with her by Protective duties to home industries. And Time's counter-revenge is found in this—that England's Free Trade has prevented the Law of Increasing Return from strengthening combinations of wealthy manufacturers against the general weal here to the same extent as it has in countries in which Protection has prevailed, and notably America.

American and English Business contrasted.

The problem of the relations between competition and combination is one in which differences of national character and conditions show themselves strongly. The Americans are the only great people whose industrial temper is at all like that of the English, and yet even theirs is not very like. Partly because of this difference of temper, but more because of the differences in the distribution of wealth and in the physical character of the two countries, the individual counts for much more in American than in English economic movements. Here few of those who are very rich take a direct part in business, they generally seek safe investments for their capital; and, again, among those engaged in

business the middle class predominates, and most of them are more careful to keep what they have than eager to increase it by risky courses. And, lastly, tradition and experience are of more service and authority in an old country than in one which, like America, has not yet even taken stock of a great part of her natural resources, and especially those mineral resources, the sudden development of some of which has been the chief cause of many recent dislocations of industry.

In England, therefore, the dominant force is that of the average opinion of business men, and the dominant form of association is that of the joint-stock company. But in America the dominant force is the restless energy and the versatile enterprise of a comparatively few very rich and able men who rejoice in that power of doing great things by great means that their wealth gives them, and who have but partial respect for those who always keep their violins under glass cases. The methods of a joint-stock company are not always much to their mind; they prefer combinations that are more mobile, more elastic, more adventurous, and often more aggressive. For some purposes they have to put up with a joint-stock company; but then they strive to dominate it, not be dominated by it. Again, since distances in America are large, many local monopolies are possible in America which are not possible in England; in fact the area of a local monopoly there is often greater than that of the whole of England. A local coal combination, for instance, means quite a different thing there from what it does in England, and is more powerful every way.

Again, partly, but not solely, because they are so much in the hands of a few wealthy and daring men, railways, both collectively and individually, are a far greater power in America than in England. America is the home of the popular saying that if the State does not keep a tight hand on the railways, the railways will keep a tight hand on the State; and many individual railways have, in spite of recent legislation, a power over the industries within their territories such as no English railway ever had, for the distances are great, and the all-liberating power of the free ocean befriends America but little.

The pressure of Combinations is becoming more Extensive, but less Intensive.

It is this change of area that is characteristic of the modern movement. In Adam Smith's time England was full of trade combinations, chiefly of an informal kind, indeed, and confined to very narrow areas; but very powerful within those areas, and very cruel. Even at the present day, the cruelest of all combinations

in England are, probably, in the trades that buy up small things, such as fish, and dairy and garden produce in detail, and sell them in retail; both producers and consumers being, from a business point of view, weak relatively to the intermediate dealers. But even in these trades there is a steady increase in the areas over which such combinations and partial monopolies extend themselves. New facilities of transport and communication tell so far on the side of the consumer, that they diminish the *intensity* of the pressure which a combination can exert; but, at the same time, they increase the *extension* of that pressure, partly by compelling, and partly by assisting, the combination to spread itself out more widely. And in England, as in other Western countries, more is heard every year of new and ambitious combinations; and of course many of them remain always secret.

The success of American Trusts has been brilliant, but perhaps not very solid.

But it is chiefly from America that a cry has been coming with constantly increasing force for the last fifteen years or more, that in manufactures free competition favours the growth of large firms with large capitals and expensive plants; that such firms, if driven into a corner, will bid for custom at any sacrifice; that, rather than not sell their goods at all, they will sell them at the Prime Cost—that is, the actual outlay required for them; which is sometimes very little; that, when there is not enough work for all, these manufacturers will turn their bidding recklessly against one another, and will lower prices so far that the weaker of them will be killed out, and all of them injured; so that when trade revives they will be able, even without any combination amongst themselves, to put up prices to a high level; that these intense fluctuations injure both the public and the producers; and the producers being themselves comparatively few in number, are irresistibly drawn to some of those many kinds of combinations to which, nowadays, the name Trust is commonly, though not quite accurately, applied; and that, in short, competition burns so furiously as to smother itself in its own smoke. It is a Committee of the American Congress that reports that “combination grows out of, and is the natural development of, competition, and that in many cases it is the only means left to the competitors to escape absolute ruin.”

The subject is one on which it would be rash to speak confidently. We of this generation, being hurried along in a whirl of change, cannot measure accurately the forces at work, and it is probable that the best guesses we can make will move the smiles of future generations; they will wonder how we could have so

much over-estimated the strength of some, and under-estimated the strength of others. But my task is to try to explain what it is that economists of this generation are thinking about competition in relation to combination; and I must endeavour to reproduce their guesses, hazardous though this may be.

To begin with, I think that it is the better opinion that popular rumour, going now as ever to extremes, has exaggerated some features of the movement towards combination and monopoly, even in America. For instance, though it is said that there are a hundred commodities, the sale of which in America is partly controlled by some sort of combination, many of these combinations turn out to be of small proportions, and others to be weak and loose. Again, the typical instances which are insisted on by those who desire to magnify the importance of the movement are nearly always the same, and they have all had special advantages of more or less importance.

This is specially true of the only Trust which can show a long record of undisputed success on a large scale—the Standard Oil Trust. For, firstly, the petroleum in which it deals comes from a few of Nature's storehouses, mostly in the same neighbourhood: and it has long been recognised that those who can get control over some of the richest natural sources of a rare commodity are well on their way towards a partial monopoly. And, secondly, the Standard Oil Trust has many of those advantages which enable large railway companies to get the better of their smaller neighbours; for, directly or indirectly, it has in some measure controlled the pipe lines and the railways which have carried its oil to the large towns and to tidal water.

The strength of a moderate policy.

On the other hand, we must remember that the future of a young and vigorous movement is to be measured, not so much by what it has achieved, as by what it has learnt; and that every unsuccessful attempt to hold together a Trust has been a lesson as to what to avoid, taught to men who are wonderfully quick to learn. In particular, it is now recognised that a very large portion of the failures in the past have been due to attempts to charge too high a price; that this high price has tempted those on the inside to break faith, and has tempted those on the outside to start rival works, which may bleed the Trust very much unless it consents to buy them up on favourable terms; and, lastly, that this high price irritates the public: and that, especially in some States, public indignation on such matters leads to rapid legislation that strikes straight at the offenders, with little care as to whether it appears to involve principles of jurisprudence which could not be applied

logically and consistently without danger. The leaders in the movement towards forming Trusts seem to be resolved to aim in the future at prices which will be not very tempting to any one who has not the economies which a large combination claims to derive, both in producing and in marketing, from its vast scale of business and its careful organization; and to be content with putting into their own pockets the equivalent of these economies in addition to low profits on their capital. There are many who believe that combinations of this kind, pursuing a moderate policy, will ultimately obtain so great a power as to be able to shape, in a great measure, the conditions of trade and industry.

*Difficulty of combining central responsibility and individual energy:
a pooling of gains often drifts into complete consolidation.*

It may be so, but these eulogists of Trusts seem to claim for them both that individual vigour, elasticity, and originating force which belong to a number of separate firms, each retaining a true autonomy, and that strength and economy which belong to a unified and centralised administration. Sanguine claims of this kind are not new; they have played a great part in nearly all the bold schemes for industrial reorganisation which have fascinated the world in one generation after another. But in this, their latest form, they have some special features of interest to the economic analyst.

They have a certain air of plausibility, for the organizers of Trusts claim that they see their way to avoiding the weak points in ordinary forms of combination among traders, which consist in the fact that their agreements can generally be evaded without being broken. For instance, the most remarkable feature in the history of English railways during the present generation is, not their tendency to agree on the fares and freights to be charged over parallel lines—for that has long been a foregone conclusion—it is the marvellously effective competition for traffic which such railways have maintained, both of a legitimate kind, by means of improved conveniences offered to the public as a whole, and of an illegitimate kind, by means of those special privileges to particular traders which we are now, at last, seriously setting ourselves to stop by law.

It is difficulties of this kind which the modern movement towards Trusts aims specially at overcoming. Trusts have very many forms and methods, but their chief motive in every case is to take away from the several firms in the combination all inducements to compete by indirect means with one another.³

³ P.S.—Professor Brentano has called my attention to the plan of the German Iron Combination, which does not allow individual firms to sell direct to

The chief instrument for this purpose is generally some plan for pooling their aggregate receipts, and making the gains of each depend on the gains of all, rather than on the amount of business it gets for itself. But here the dilemma shows itself. If each establishment is left to its own devices, but has very little to lose by bad management, it is not likely long to remain well managed, and anyhow the Trust does not gain much of the special economy resulting from production on a very large scale. For this a partial remedy can sometimes be found in throwing as much of its work as possible on to those establishments which are best situated, have the best and most recent appliances and the ablest management, and, perhaps, closing entirely some of the others. But when once the pooling has begun, the combination is on an inclined plane, and every step hurries it on faster towards what is virtually complete amalgamation and consolidation. The recent history of Trusts shows a constant tendency to give a more and more absolute power to the central executive, and to reduce the heads of the separate establishments more and more nearly to the position of branch managers. In some cases the only substantial difference between such a Trust and a consolidated joint stock company is, that it is nominally left open to the several parties contracting to claim their separate property after the lapse of a certain number of years, while some are already preparing to dissolve and reconstitute themselves formally as joint stock companies.

This tendency has been helped on by the action of the legislature and the law courts, and since this action can be traced back in some measure to the imperfect analysis of competition in the older economic writings, it has a special interest for us here.

IV.—*A false antithesis between Competition and Combination.*

It has led to the favouring of rigid as against loose forms of Combination.

There seems to have been set up a false antithesis between competition and combination. For instance, if 100 workmen agreed to act together, as far as possible, in bargaining for the sale of their labour, they were denounced as combining to limit freedom, even when they did not interfere in any way with the liberty of other workmen, but merely deprived the employers of the freedom of making bargains with the 100 workmen, one by one. But the employer himself was allowed to unite in his own hands the power

the consumer, but only through a central office. It fixes the amount of each firm's produce which may be sold, and the price of sale; and each firm gains by every reduction it can make in its own expenses of working. This plan has great elements of strength, and is probably specially suitable for Germany. But it is yet on its trial.

of hiring a hundred or twenty hundred men, and if he had not enough capital of his own he might take others into private, if not into public partnership with him. Now, no trades union was likely to be as compact a combination, governed by as single a purpose, as a public or private firm, still less as an individual large employer; and therefore, there was not only a class injustice, but also a logical confusion, in prohibiting combinations among workmen, on the ground that free competition was a good, and that combination, being opposed to free competition, was, for that reason, an evil.

It was an additional grievance to the workmen that employers had all manner of facilities for combination, of which they made full use; as is vigorously urged by Adam Smith, to whom the working classes owe more than they know. And it was this social injustice, rather than the logical inconsistency of economists and legislators, that led workmen to claim—and for the greater part successfully—that nothing should be illegal if done by workmen in combination which would not be illegal if done by any one of them separately—a principle which works well practically in the particular case of workmen's combinations if applied with moderation; though it has no better claim to universal validity than the opposite doctrine.

But at present it is with the latter that we are concerned—the doctrine, namely, that a use of the rights of property which would be “combination in restraint of competition” if the ownership of the property were in many hands, is only a free use of the forms of competition when the property is all in a single hand. This doctrine has resulted in the prohibition of pooling between railways which were allowed to amalgamate, and in the prohibition of combination on the part of a group of traders to coerce others to act with them, or to drive others out of the trade, though all the while no attempt was made to hinder a single very wealthy firm from obtaining the despotic control of a market by similar means.

But to the economists of to-day the whole question appears both more complex and more important than it seemed to their predecessors, so they are inquiring in detail how far it is true that the looser forms of combination are specially dangerous in spite of their weakness, and even to some extent because of their weakness; how far the greater stability and publicity, and sense of responsibility and slowness of growth, of a single consolidated firm make it less likely to extend its operations over a very wide area, and less likely to make a flagrantly bad use of its power; and, lastly, how far it may be expedient to prohibit actions on the part of loose combinations, while similar actions on the part of individuals

and private firms are allowed to pass in silence, because no prohibition against them could be effectual.

It is a sign of the times that the American Senate approved, on 8th April last, a Bill of Senator Sherman's, of which the second Section begins thus: "Every person who shall monopolise, or attempt to monopolise, or conspire with any other person or persons to monopolise, any part of the trade or commerce among the several States, or with foreign nations, shall be deemed guilty of a misdemeanour." This clause is interesting to the constitutional lawyer on account of the skill with which it avoids any interference by the central authority with the internal affairs of the separate States; and though, partly for this reason, it is perhaps intended to be the expression of a sentiment that may help to guide public opinion, rather than an enactment which will bear much direct fruit; yet it is of great interest to the economist as showing a tendency to extend to the action of individuals a form of public criticism which has hitherto been almost confined to the action of combinations.

To return, then, to the tendency of Trusts towards consolidation. It is probable that the special legislative influences by which it has been promoted may be lessened, but that other causes will remain sufficiently strong to make a combination, which has once got so far as any sort of permanent pooling, tend almost irresistibly towards the more compact unity of a joint stock company. If this be so, the new movement will go more nearly on old lines than at one time seemed probable; and the question will still be the old one of the struggle for victory on the one hand between large firms and small firms, and on the other between departments of the Government, imperial or local, and private firms. I will then pass to consider the modern aspects of this question, ever old and ever new, but never more new and never more urgent than to-day.

V.—*Modern analysis tends in many cases to justify State Control, but not State Management.*

To begin with, it is now universally recognised that there is a great increase in the number and importance of a class of industries, which are often called monopolies, but which are perhaps better described as *indivisible* industries. Such are the industries that supply gas or water in any given area, for only one such company in any district can be given leave to pull up the streets. Almost on the same footing are railways, tramways, electricity supply companies, and many others. Now, though there are some little differences of opinion among the economists of to-day, as to the scale on which the owners of such undertakings when in private hands should be compensated for interference

with what they had thought their vested rights, all are agreed that such right of interference must be absolute. Economists of all schools are eagerly inquiring what form it is most expedient for this interference to take. And here differences of opinion show themselves. The advantages of a bureaucratic government appeal strongly to some classes of minds, among whom are to be included many German economists and a few of the younger American economists who have been much under German influence. But those in whom the Anglo Saxon spirit is strongest, would prefer that such undertakings, though always under public control, and sometimes even in public ownership, should whenever possible be worked and managed by private corporations. We (for I would here include myself) believe that bureaucratic management is less suitable for Anglo Saxons than for other races who are more patient and more easily contented, more submissive and less full of initiative, who like to take things easily and to spread their work out rather thinly over long hours. An Englishman's or an American's life would involve too much strain to make them happy, while the Englishman would fret under the constraints and the small economies of their lives. Without therefore expressing any opinion as to the advantages of the public management of indivisible undertakings on the Continent, the greater part of the younger English and American economists are, I think, inclined to oppose it for England and America. We are not sure that we could exchange our own industrial virtues for those of the Continent if we wished to, and we are not sure that we do wish it. And though we recognise that the management of a vast undertaking by a public company has many of the characteristics of bureaucratic management, yet we think the former is distinctly the better suited for developing those faculties by which the Anglo Saxon race has won its position in the world. We believe that a private company which stands to gain something by vigorous and efficient management, by promptness in inventing, as well as in adopting and perfecting improvements in processes and organisation, will do much more for progress than a public department.

Again, while a public company is inferior to a small private firm in its power and opportunities of finding out which among its employes have originating and constructive ability, a department of Government is far inferior in these respects to a joint stock company, especially in England. And further, such a department is more liable to have the efficiency of its management interfered with for the purpose of enabling other persons to gain the votes of their constituents on questions in which it has no direct concern; and as a corollary from this, it tends to promote

the growth of political immorality, and it suffers from that growth.

There is certainly a growing opinion among English and American economists, that the State must keep a very tight hand on all industries in which competition is not an effective regulator; but this is the expression of a very different tone of thought from that which is leading so many German economists towards what is called State Socialism. In fact, as far as I can judge, English economists at all events are even more averse to State management than they were a few years ago; the set of their minds is rather towards inquiring how the advantages claimed for State management, without its chief evils, can be obtained even in what I have called indivisible industries; they are considering how a resolute intervention on the part of the State may best check the growth of *Imperia in Imperio*, and prevent private persons from obtaining an inordinate share of the gains arising from the development, through natural causes, of what are really semi-public concerns, and at the same time leave them sufficient freedom of initiative and sufficient security of gain by using that freedom energetically to develop what is most valuable in the energy and inventiveness of the Anglo Saxon temper.⁴

But, though we dislike and fear the present tendency towards a widening of the area of public management of industries, we cannot ignore its actual strength. For more forethought and hard work are needed to arrange an effective public control over an undertaking than to put it bodily into the hands of a public department; and there is always a danger that in a time of hasty change the path of least resistance will be followed.

By way of illustration of the inquiries that have had their origin in this fear of public management, as contrasted with public control and public ownership, I would here mention a notion which has been suggested partly by the relations of some municipalities to their tramways, gas and water works. At present it is in a very crude form, and not ready for immediate application; but it seems to have occurred independently to a good many people, and it may have an important future. It is that a public authority may be able to own the franchise and, in some

⁴ Among the younger English economists who have written on the subject of Combinations, Trusts, and Government interference, I would specially refer to Mr. Rae and Professor Foxwell. Most of the other young American economists have written on it instructively from various points of view, and in Mr. Baker's "Monopolies and the People," to which I am myself much indebted, the English reader will find condensed into a short compass an account of the general position of these questions in America, together with some bold and interesting suggestions for reform. Some useful documents relating to Trusts have recently been published in a Consular Report by our Foreign Office [5896-32].

cases, part of the fixed capital of a semi-public undertaking, and to lease them for a limited number of years to a Corporation who shall be bound to perform services, or deliver goods, at a certain price and subject to certain other regulations, some of which may perhaps concern their relations to their employés. In order that the plan may have a fair chance of success, it is essential that the capital to be supplied by the private Corporation should not be so large as to prevent there being a real and effective competition for the franchise. But this being assumed, the special point of the proposal is that, where possible, the competition for the franchise shall turn on the price or the quality, or both, of the services or the goods, rather than the annual sum paid for the lease. Competition as to quality is, from the consumer's point of view, often just as beneficial as competition as to price, and sometimes more so. And in industries which obey the Law of Increasing Return, as very many of these indivisible industries do, a reduction of price or an improvement of quality will confer on the consumer a benefit out of all proportion to the extra cost involved.⁵

VI.—*The general influence of large Combinations.*

They economise in bargaining: but it is doubtful whether they render Industry more Stable.

But I have lingered too long over those industries which I have called indivisible, and I must pass to those in which competition exerts a pretty full sway. The first point to be observed is that competition in bargaining and competition in production stand in very different relations to the public interest; and that one of the great advances in modern analysis consists in the emphasis which it lays on the distinction between the two. Competition in bargaining constitutes a great part of competition in marketing, but is not the whole of it. For under marketing is included the whole of the effective organisation of the trade side of a business; and most of this performs essential services for the public, and is, in fact, of the same order as production commonly so called. But a great part of marketing consists of bargaining, of manœuvring to get others to buy at a high price and sell at a low price, to obtain special concessions or to force a trade by offering them. This is, from the social point of view, almost pure waste; it is that part of trade as to which Aristotle's dictum is most nearly true, that no one can gain except at the loss of another. It has a great attraction for some minds that are not merely mean; but nevertheless it is the only part of honest trade

⁵ This belongs to a class of questions relating to monopolies, &c., the more general and abstract aspects of which can be best shown by the diagrammatic method.

competition that is entirely devoid of any ennobling or elevating feature. A claim is made on behalf of large firms and large combinations that their growth tends to diminish the waste, and on the whole perhaps it does. The one solid advantage which the public gain from a combination powerful enough to possess a local monopoly is that it escapes much waste on advertising and petty bargaining and manœuvring. But its weakness in this regard lies in the fact that to keep its monopoly it must be always bargaining and manœuvring on a large scale. And if its monopoly is invaded, it must bargain and manœuvre widely in matters of detail as well as in larger affairs.

Still less can we fully concede, without further proof, the claim which has been urged on behalf of such combinations, that they will render industry more stable and diminish the fluctuations of commercial activity. This claim, though put forward confidently and by many writers, does not appear to be supported by any arguments that will bear examination. On the one hand some industries which are already aggregated into large and powerful units, such as railway companies, give exceptionally steady employment; and others, such as the heavy iron and the chemical industries, exceptionally unsteady. And when combinations succeed in steadying their own trades a very little, they often do it by means which diminish production and disturb other trades a very great deal. The teaching of history seems to throw but little light on the question, because the methods of regulation which are now suggested have not much in common with those of earlier times, while the causes which govern fluctuations in prices have changed their character completely.

Large Combinations can turn economically to account such knowledge as already exists.

Let us then next turn to the economies of production on a large scale. They have long been well known, and our forefathers certainly did not underrate their importance. For, though the absence of any proper industrial census in England prevents us from getting exact information on the subject, yet there seems no doubt that the increase in the average size of factories has gone on, not faster, but slower than was thought probable a generation or two ago. In many industries, of which the Textile may be taken as a type, it has been found that a comparatively small capital will command all the economies that can be gained by production on a large scale; and it seems probable that in many industries in which the average size of businesses has been recently increasing fast, a similar position of maximum economy will shortly be attained without any much further increase in size.

Those reductions in the expenses of production of commodities which have been claimed by the eulogists of Trusts and other large combinations, as tending to show that their gains are not at the expense of the public, turn out generally to have been at least equalled by the reductions in the expenses of production in similar industries in which there was no combination. And this count in their eulogy, though it may truly stand for something, seems to have been much exaggerated. But after all, what these very large public firms and combinations of firms have done has generally been only to turn to good account existing knowledge, and not to increase that knowledge. And this brings us to the main reason for regarding with some uneasiness any tendency there may be towards such consolidations of business.

But in a multitude of independent undertakers there is more inventive energy.

It has always been recognised that large firms have a great advantage over their smaller rivals in their power of making expensive experiments; and in some of the modern "scientific" industries, they use part of their resources in hiring specialists to make experiments for them in the technical applications of science. But on the whole observation seems to show, what might have been anticipated *à priori*, that these advantages count for little in the long run in comparison with the superior inventive force of a multitude of small undertakers. There are but few exceptions to the rule, that large private firms, though far superior to public departments, are yet in proportion to their size, no less inferior to private businesses of a moderate size in that energy and resource, that restlessness and inventive power, which lead to the striking out of new paths. And the benefits which the world reaps from this originality are apt to be underrated. For they do not come all at once like those gains which a large business reaps by utilizing existing knowledge and well proven economies; but they are cumulative, and not easily reckoned up. He who strikes out a new path by which the work of eight men is rendered as efficient as that of ten used to be, in an industry that employs 100,000 men, confers on the world a benefit equal to the labour of 20,000 men. And this benefit may in many cases be taken as running for many years. For though his discovery might have been made later by someone else of equal inventive power, yet this someone else, starting with that discovery in hand, is likely to make another improvement on it.

I believe that the importance of considerations of this kind is habitually underrated in the world at large; and that the older economists, though fully conscious of them, did not explain with

sufficient clearness and iteration the important place which they take in the claims of industrial competition on the gratitude of mankind.

The chemist in his laboratory can make experiments on his own responsibility: if he had to ask leave from others at each step he would go but slowly, and though the officials of a company may have some freedom to make experiments in detail, yet even as regards these they seldom have a strong incentive to exertion; and in great matters the freedom of experimenting lies only with those who undertake the responsibility of the business.

It may indeed be admitted that some kinds of industrial improvements are getting to depend on the general increase of scientific knowledge rather than on such experiments as can only be made by business men. This dependence however tells on the side of small firms which have a great managing ability in proportion to their capital, but cannot afford to make expensive experiments for themselves. For nearly all such scientific knowledge, as soon as it is achieved, becomes the public property of the nation, or rather of the world.

VII.—*Modern analysis of the motives of Business Competition.*

The love of money is only one among many.

But the growing importance in business of that scientific knowledge that has its origin in academic studies, relatively to that technical knowledge which has its origin in business work, may serve as a convenient introduction to the next point that I want to make in the analysis of competition. It is that the motives which induce business men to compete for wealth are not altogether as sordid as the world in general, and I am forced to admit, economists in particular, have been wont to assume.

The chemist or the physicist may happen to make money by his inventions, but that is seldom the chief motive of his work. He wants to earn somehow the means of a cultured life for himself and his family; but, that being once provided, he spends himself in seeking knowledge partly for its own sake, partly for the good it may do to others, and last, and often not least, for the honour it may do himself. His discoveries become collective property as soon as they are made, and altogether he would not be a very bad citizen of Utopia just as he is. For it would be a great mistake to suppose that the constructors of Utopias from the time of Plato downwards have proposed to abolish competition. On the contrary, they have always taken for granted that a desire to do good for its own sake will need to be supplemented by emulation or competition for the approbation of others.

But business men are very much of the same nature as scientific men; they have the same "instincts of the chase," and many of them have the same power of being stimulated to great and even feverish exertions by emulations that are not sordid or ignoble. This part of their nature has however been confused with and thrown into the shade by their desire to make money. The chief reason why the scientific man does not care much for money is that in scientific work the earning of much money is no proof of excellence, but sometimes rather the reverse. On the other hand, in business a man's money-earning power, though not an accurate test of the real value to the world of what he has done, is yet often the best available. It is that test which most of those, for whose opinion he cares, believe to be more trustworthy than the highly-coloured reports the world hears from time to time of the benefits which it is just going to derive from a new invention or plan of organising that is just going to revolutionise a branch of industry. And so all the best business men want to get money, but many of them do not care about it much for its own sake; they want it chiefly as the most convincing proof to themselves and others that they have succeeded.

Economic progress requires as a condition free individual responsibility, but not the maintenance of those rights of property which lead to extreme inequalities of wealth.

These are the very men for whom the older economists were most eager to claim freedom of competition as needful to induce them to do fully their high work for the world. But this seems to involve the error of running together and treating as though they were one, two different positions—an error which seems to resemble in character the failure to distinguish adequately between the results of Protection in an old and a new country.

The first of these positions is that industrial progress depends on our getting the right men into the right places, and giving them a free hand and sufficient incitement to exert themselves to the utmost; and the second is that nothing less than the enormous fortunes which successful men now make and retain would suffice for that purpose. This last position seems to be untenable.

The present extreme inequalities of wealth tend in many ways to prevent human faculties from being turned to their best account. A good and varied education, freely prolonged to those children of the working classes who show the power and the will to use it well, an abundance of open-air recreation even in large towns, and other requisites of a wholesome life—such things as these might, most of us are inclined to think, be supplied by taxes levied on the rich, without seriously checking the accumulation of material

capital, and with the effect of increasing rather than diminishing the services which competition renders to society by tending to put the ablest men into the most important posts, the next ablest into the next most important, and so on, and by giving to those in each grade freedom sufficient for the full exercise of their faculties.

It is quite true that where any class of workers have less than the necessities for efficiency, an increase of income acts directly on their power of work. But when they already have those necessities the gain to production from a further increase of their income depends chiefly on the addition that it makes, not to their power of working, but to their will to exert themselves. And all history shows that a man will exert himself nearly as much to secure a small rise in income as a large one, provided he knows beforehand what he stands to gain, and is in no fear of having the expected fruits of his exertions taken away from him by arbitrary spoliation. If there were any fear of that he would not do his best, but if the conditions of the country were such that a moderate income gave as good a social position as a large one does now; if to have earned a moderate income were a strong presumptive proof that a man had surpassed able rivals in the attempt to do a difficult thing well, then the hope of earning such an income would offer to all but the most sordid natures inducements almost as strong as they are now when there is an equal hope of earning a large one.

The socialists have underrated the difficulty of business work.

On all this class of questions modern economists are inclined to go a little way with the socialists. But all socialist schemes, and especially those which are directly or indirectly of German origin, seem to be vitiated by want of attention to the analysis which the economists of the modern age have made of the functions of the undertaker of business enterprises. They seem to think too much of competition as the exploiting of labour by capital, of the poor by the wealthy, and too little of it as the constant experiment by the ablest men for their several tasks, each trying to discover a new way in which to attain some important end. They still retain the language of the older economists, in which the employer, or undertaker, and the capitalist are spoken of as though they were, for all practical purposes, the same people. The organ of the German school of English socialists prints frequently in thick type the question, "Is there "one single useful or necessary duty performed by the capitalist "to-day which the people organised could not perform for themselves?" It would be just as reasonable to ask if there is a single victory to which Julius Cæsar or Napoleon conducted their troops which the troops, properly organised, could not have

equally well won for themselves; or whether there is a single thing written by Shakespeare which could not have been equally well written by any one else if, as Charles Lamb said, he happened to "have the mind to do it." It is quite true that many business men earn large incomes by routine work. It is just in these cases that co-operation can dispense with middlemen and even employers. But the German socialists have been bitter foes of co-operation, though this antagonism is less than it was.

The world owes much to the socialists, as it does to every set of enthusiasts among whom there are noble men, and many a generous heart has been made more generous by reading their poetic aspirations; but before their writings can be regarded as serious contributions to economic science, they must make more careful and exact analysis of the good and the evil of competition. They must suggest some reasonably efficient substitute for that freedom which our present system offers to constructive genius to work its way to the light, and to prove its existence by attempting difficult tasks on its own responsibility, and succeeding in them; for those who have done most for the world have seldom been those whom their neighbours would have picked out as likely for the work. They must not, as even Mr. Bellamy and other American socialists do, in spite of their strong protestations to the contrary, assume implicitly a complete change of human nature, and propound schemes which would much diminish the aggregate production, but which they represent as enabling every family to attain an amount of material well-being which would be out of reach if the aggregate income of England or America were divided out equally among the population.

VIII.—*The growing importance of Public Opinion as an economic force.*

But though the socialists have ascribed to the virtues inherent in the human breast, and to the regulating force of public opinion, a much greater capacity for doing the energizing work of competition than they seem really to have, yet, unquestionably, the economists of to-day do go beyond those of earlier generations in believing that the desire of men for the approval of their own conscience and for the esteem of others is an economic force of the first order of importance, and that the strength of public opinion is steadily increasing with the increase and the diffusion of knowledge, and with the constant tendency of what had been regarded as private and personal issues to become public and national.

Public opinion acts partly through the Government. But though the enforcement of the law in economic matters occupies the time of a rapidly increasing number of people, and its adminis-

tration is improving in every way, it fails to keep pace with the demands resulting from the growing complexity of economic organisation and the growing sense of responsibility of public opinion. A part of this failure is due to a cause which might easily be remedied; it is that the adjustment of punishment to offences is governed by traditions descending from a time when the economic structure of England was entirely different. This is most conspicuous with regard to the subtler, or, as they are sometimes called with unconscious irony, the more gentlemanly forms of commercial fraud on a large scale, for which the punishment awarded by the law courts is often trivial in comparison with the aggregate gains which the breakers of the law, whose offences can seldom be proved, make by their wrongdoing; and it is still more trivial in comparison with the aggregate injury which such wrongdoing inflicts on the public. Many of the worst evils in modern forms of competition could be diminished by merely bringing that part of the law which relates to economic problems of modern growth into harmony with that which relates to the old-fashioned and well-matured economic questions relating to common picking and stealing.

But at best the action of the law must be slow, cumbrous, and inelastic, and therefore ineffective. And there are many matters in which public opinion can exercise its influence more quickly and effectively by a direct route than by the indirect route of first altering the law. For of all the great changes which our own age has seen in the relative proportions of different economic forces, there is none so important as the increase in the area from which public opinion collects itself, and in the force with which it bears directly upon economic issues.

And in this connection I may perhaps transgress a little beyond the bounds I have set myself in this paper, and may glance rapidly at combinations of labour on the one side and of employers on the other. They are now able to arrange plans of campaign for whole trades, for whole counties, for the whole country, and sometimes even beyond; and partly on account of the magnitude of the interests concerned, partly because trade disputes are being reduced to system, affairs which would be only of local interest are discussed over the whole kingdom.

Many turbulent little quarrels which centered more often about questions of individual temper, than of broad policy, are now displaced by a few great strikes; as to which public opinion is on the alert; so that a display of temper is a tactical blunder. Each side strives to put itself right with the public; and requires of its leaders above all things that they should persuade the average man that their demands are reasonable, and that the

quarrel is caused by the refusal of the other side to accept a reasonable compromise.

This change is increasing the wisdom and the strength of each side; but the employers have always had fairly good means of communication with one another; it is the employed that have gained most from cheap means of communication by press, by railway, and by telegraph, and from improvements in their education and in their incomes, which enable them to make more use of these new and cheaper facilities. And while the employers have always known how to present their case to the public well, and have always had a sympathetic public, the working classes are only now beginning to read newspapers enough to supply an effective national working class opinion; and they are only now learning how to present their case well, and to hope much from, or care much for, the opinion of those who are neither employers nor of the working classes.

I myself believe that in all this the good largely predominates over the evil. But that is not the question with which I am specially concerned at present. My point is that, in the scientific problem of estimating the forces by which wages are adjusted, a larger place has to be allowed now than formerly to the power of combination, and to the power of public opinion in judging, and criticizing, and aiding that combination; and that all these changes tend to strengthen the side of the employés, and to help them to get a substantial though not a great increase of real wages; which they may, if they will, so use as to increase their efficiency, and therefore to increase still further the wages which they are capable of earning, whether acting in combination or not.

Public Opinion needs to be Educated for its new Responsibilities.

And thus public opinion has a very responsible task. I have spoken of it as the opinion of the average man; that is, of an average member of one of those classes of society that is not directly and immediately concerned in the question at issue. But he is very busy, and has many things to think about. He makes great mistakes; but he learns by all of them. He has often astonished the learned by the amount of ignorance and false reasoning which he can crowd into the discussion of a difficult question; and still more by the way in which he is found at last to have been very much in the right on the main issue. He is getting increased power of forming a good and helpful opinion, and he is being educated in mind and in spirit by forming it, and by giving it effect. But in the task which he is undertaking there are great difficulties ahead.

In an industrial conflict each side cares for the opinion of the

public at large, or as we have said of the average man. But they often care especially for the good opinion of those whose sympathy they are most likely to get: in the late South Wales strike, for instance, the railway companies were specially anxious about the good opinion of the shippers, and the engine drivers about that of the colliers. And there is some fear that when party discipline becomes better organized, those on either side will again get to care less for any public opinion save that of their own side. And if so, there may be no great tendency towards agreement between the two sides as to what are reasonable demands.

It is true that there is always the action of outside competition tending to visit with penalties either side, which makes excessive use of any tactical advantage it may have obtained. As we have just noticed, the shrewdest organisers of a Trust are averse to raising the price of its wares much above the normal or steady competition price. And the first point which courts of Conciliation and Arbitration have to consider is, what are the rates of wages on the one hand and of profits on the other, which are required to call forth normal supplies of labour and capital respectively; and only when that has been done, can an inquiry be properly made as to the shares in which the two should divide between them the piece of good or ill fortune which has come to the trade. Thus the growth of combinations and partial monopolies has in many ways increased, and in no way diminished, the practical importance of the careful study of the influences which the normal forces of competition exert on normal value.

But it must be admitted that the direct force of outside competition in some classes of wages disputes is diminishing; and though its indirect force is being increased by the increased power which modern knowledge gives us of substituting one means of attaining our ends for another, yet on the whole the difficulty of deciding what is a reasonable demand is becoming greater. The principles on which not only the average man, but also an expert court of Conciliation or Arbitration should proceed in forming their judgments, are becoming, in spite of the great increase of knowledge, more and more vague and uncertain in several respects.

And there are signs of a new difficulty. Hitherto the general public has been enlightened, and its interests protected by the fact that the employers and employed when in conflict have each desired to enlighten the public as to the real questions at issue; and the information given on one side has supplemented and corrected that on the other: they have seldom worked together systematically to sacrifice the interests of the public to their own, by lessening the supply of their services or goods, and thus raising their price artificially. But there are signs of a desire to arrange

firm compacts between combinations of employers on the one side and of employes on the other to restrict production. Such compacts may become a grievous danger to the public in those trades in which there is little effective competition from foreign producers: a danger so great that if these compacts cannot be bent by public opinion they may have to be broken up by public force.

It is, therefore, a matter of pressing urgency that public opinion should accustom itself to deal with such questions, and be prepared to throw its weight against such compacts as are injurious to the public weal, that is, against such compacts as are likely to inflict on the public a real loss much greater than the gain to that trade; or in other words, are of such a nature that if their principle were generally adopted in all trades and professions, then all trades and professions would lose as buyers more than they would gain as sellers.

IX.—*Conclusion.*

To sum up. It seems that one cause of the present strength of Protection in other countries is that the earlier English economists lessened the force of the valid arguments against it, by mixing them up with others, which, though valid as regards England, did not apply without great modifications to new countries; but economists of the younger generation, however fervent their devotion to free trade, seldom speak of protection in new countries with the old unmeasured bitterness. The change of mental attitude towards competition in this aspect is in a great measure accomplished; and similar changes in the attitude of economists to monopolies and combinations are now in progress. It is clear that combinations and partial monopolies will play a great part in future economic history; that their effects contain much good as well as much evil, and that to denounce them without discrimination would be to repeat the error which our forefathers made with regard to Protection. If we do not take time by the forelock, and begin early to consider how their evil effects may be minimized and their possible good developed, we shall miss an opportunity that will never recur. For a later generation will find it more difficult to extricate the good from the evil than those who are contemporary with that great growth of the facilities of communication which are giving to the forces of combination and monopoly a new character, and in some directions a new strength.

So far nearly all the younger economists appear to be agreed; but while some would not be sorry to see small firms displaced by large, large firms by Trusts, and Trusts by Government departments, others, in whom the Anglo Saxon spirit is stronger, regard

these tendencies with very mixed feelings, and are prepared to exert themselves to the utmost to keep Government management within narrow limits. They are most anxious to preserve the freedom of the individual to try new paths on his own responsibility. They regard this as the vital service which free competition renders to progress, and desire on scientific grounds to disentangle the case for it from the case for such institutions as tend to maintain extreme inequalities of wealth; to which some of them are strongly opposed. In order to preserve what is essential in the benefits of free competition, they are willing to have a great extension of public control over private and semi-public undertakings; but above all, they look to the extension of the new force of public opinion as a means of eliminating much of the evil effects of competition, while retaining its good effects.

I have spoken of some aspects of competition, but those of which I have said nothing are more numerous and certainly not less important. I have put aside, as belonging to a different order of inquiry, the moral aspects of competition, and all study of its bearing on those who are least able to help themselves. But I should have liked, if time had sufficed, to compare the tendency towards the formation of vast Trusts with that towards national or even international federation of Trade Unions; and again with the growth of the centralized force of the Co-operative Wholesale Society. I should have liked to examine the new forms of indirect competition between industrial groups, each of which is in direct competition with a third one, and so on.

I have however taxed your patience too long already, and must ask you to be lenient in your judgment of this imperfect and fragmentary study. I have endeavoured to give some illustrations of the changes which are coming over economic studies. I believe that the great body of modern economists think that the need of analysis and general reasoning in economics is not less than our predecessors supposed, but more. And this is because we think economic problems more difficult than they did. We are recognising more clearly than they did that all economic studies must have reference to the conditions of a particular country and time. Economic movements tend to go faster than ever before, but, as Knies pointed out, they tend also to synchronize; and the economists of our own country have much more to learn now than fifty years ago from the contemporary history of other countries; but in spite of the many great benefits which we are deriving from the increase of our historical knowledge, the present age can rely less than any other on the experience of its predecessors for aid in solving its own problems.

Every year economic problems become more complex; every

year the necessity of studying them from many different points of view and in many different connections becomes more urgent. Every year it is more manifest that we need to have more knowledge and to get it soon in order to escape, on the one hand, from the cruelty and waste of irresponsible competition and the licentious use of wealth, and on the other from the tyranny and the spiritual death of an ironbound socialism.

MISCELLANEA.

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I.—*The Element of Chance in Competitive Examinations.*

By PROFESSOR F. Y. EDGEWORTH, M.A., D.C.L.

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PART II.

We might despair of obtaining sufficient statistical material for our reasoning, if we had to depend upon data of the sort which have been hitherto adduced; where several examiners mark the same piece of work. It will suffice, I think, to combine a few instances of this type with a great many instances of two examiners both marking several pieces of work. Now the latter species of statistics is less rare; and by the kindness of friends who are behind the scenes, I have been able to inspect a considerable variety of such instances. I proceed to analyse the experience which I have collected; and to apply it to the general case of an examination in several (*e.g.*, ten) subjects.

The first statistical evidence which I shall adduce may be

regarded as particularly favourable to the cause of examinations. For it consists of a comparison between the marks given to the same work, not by different examiners, but by the same examiner at different times. It may fairly be assumed that an examiner differs less from himself than from another person. Thus the discrepancy between the marks compared in this experiment may reasonably be regarded as a minimum—unless indeed the single examiner dealt out marks in a particularly casual manner.

But, so far is this insinuation from being justified, that in almost every other circumstance besides that which has been mentioned this examination is particularly free from haphazard. The subject is the one which seems particularly adapted to the estimate of merit by numerical marks, namely, mathematics. The examiner was not only distinguished for proficiency in the subject, and an original cultivator of it, but also well informed as to the calibre of the examined, and the standard which might reasonably be expected from them. I refer to Mrs. Bryant, D.Sc., of the North London Collegiate School; who has kindly allowed me to inspect the results which she obtained by examining twice over—a considerable interval of time intervening between the examinations—a set of forty papers written by her own pupils.

The simplest form of stating the result of this and similar experiments, will be to give its bearings upon that which we particularly want to discover, namely, the uncertainty and erroneousness incident to sums of several, say 10, marks. The most serviceable expression of this effect would be, I think, the coefficient which conveys the answers to the following question: Supposing that the same candidate is examined in ten subjects by two sets of ten examiners, each mark being liable to that degree of chance which is evidenced by the experiment under consideration; what is the probable discrepancy between the sum of the 10 marks given by one set of examiners, and the sum of the 10 marks given by the other set of examiners? In the case before us this coefficient proves to be 2·5 per cent. (Making a correction for a certain difference of *scale*, or general level—a matter which will be noticed in the sequel. Without this correction, the coefficient of probable discrepancy would have figured as 3·5 per cent. of the average mark of the whole set under examination.) This means that if two examiners marked on the whole at the same level, but with respect to particular papers disagreed with each other about as much as Mrs. Bryant with herself, then the difference between their marks would in the long run as often as not amount to 2·5 per cent. (of the average mark for the whole set of ten papers examined).¹

I have fixed upon this expression not exactly as the conclusion which in general we desire to reach, but rather as the most familiar and conspicuous half-way house in the course of our reasoning. What we primarily seek to discover may be thus formulated: Defining as the honour line the limit which separates the successful or placed competitors from the unsuccessful herd; up to what dis-

¹ For a paper very much above the average the estimate might be different.

tance from that limit is any one of the successful candidates unsafe, in this sense, that he might possibly have come out among the unsuccessful, if the *personnel* of the examiners had happened to have been differently—though equally well—selected.

Consider first the case where, as in the London University Matriculation Examination, the honour line consists of a fixed number of marks, *e.g.*, 1,800. What is the chance that, if any particular candidate gets $1,800 + n$ marks from one set of examiners, he might get less than 1,800 from another? The answer depends on that probable discrepancy between any two examiners which we have just been investigating. Assume that any two sets of ten examiners are as likely as not to differ (in marking the same work) to the extent of 2·5 per cent. of the average mark for the whole set of candidates, which might be, say, 1,600 or 1,400 where the honour line is 1,800, if a candidate is brought out by one set of examiners 2·5 per cent. above the honour line, it is as likely as not that under another set of examiners he would have come out *either* at least as high as *five* per cent. above the line, or at least as low as the line. It is with the latter alternative that we are principally concerned. The probability of this is only half a half; that is, a quarter.

By parity of reasoning with the aid of the *gens d'arme's* hat—from which, as from a conjurer's, so much may be extracted—we can find the chance that, if a candidate under one set of examiners clears the honour line by some higher percentage, say 5 or 10 per cent., he might, if the same work had been marked by another set of examiners, have fallen below the honour line. Suppose for instance that, under one set, the candidate comes out 10 per cent. above the honour line, there is a chance of rather more than 1 in 300 that, under another set of equally competent examiners, he would have come out underneath the line. If we regard so small a danger as equivalent to practical certainty, we may consider that candidate and all above him as safe. If we take a more lenient criterion of the stability and justice which may reasonably be expected in a sound system of appointment by competition, and define practical certainty by odds of 200 to 1; the difference in the conclusion will not be so great as the uninitiated might have expected. The limit of safety will be lowered not in the ratio of 3 to 2, but only from 10 to 9·5 per cent. Even if we were content to stake the irreversibility of our appointments on so slender a basis of probability as the odds of 100 to 1, yet in order to guarantee even that degree of safety the candidate would have to clear the line by nearly 9 (8·75) per cent. If we lower our standard of security by half as much again, still a distance of 7 per cent. will be required in order to secure the humble odds of 50 to 1 against mischance.

So far on the supposition that the honour line is predetermined. But in a very² general and important case it is not the numerical

² This plan is generally adopted in the competition for appointments under Government. The older universities, as I understand, incline to the first plan of a predetermined honour line; but it is determined not by a fixed amount of marks, but by a constant degree of merit.

boundary of the class, but the number of persons to be included in the class, that authority has fixed beforehand. Say N prizes are to be given; the N candidates who come out first take the prizes; the order, not the absolute marks of the candidates, determining success. However, when M , the number of competitors, and also the number of prizes, N , are considerable, the numerical value of the honour line is not likely to differ very much for different sets of examiners—provided that the examiners on each subject mark on a fairly uniform *scale*. Suppose that a large number M of conscripts were measured by two recruit sergeants employing some very inaccurate method, for instance mere guesswork. The order in which the men would be arranged by the different sergeants would doubtless be very different. But the height of the man who came out $(M-N)$ th in the one arrangement would be much the same as the height of the (generally different) man who came out $(M-N)$ th in the other arrangement.³ This principle allows us to transfer with due caution the results obtained on the hypothesis of a fixed honour line to the case where the number of prizemen—not the mark of the lowest of them—is fixed beforehand.

To appreciate the significance of this result, let us imagine, if possible, that the marking in all the papers at any of our public examinations was as free from the element of chance as the double examination conducted by a single examiner, which we have been considering. I take at random an examination for fifty clerkships in 1875, of which the statistics are contained in the report of the Civil Service Commissioners, published in 1876 (p. 182). Here the number of candidates is one hundred and seventy-one. The average mark of the whole set, as represented by the candidate sixty-sixth in the order of merit is 1,600. The mark of the lowest successful candidate, “the honour line,” is 1,720. Now let us inquire how many of the successful candidates enjoy that higher, yet not absolute degree of security which is represented by odds of 300 to 1 against their displacement. By the reasoning in the preceding paragraphs, it appears that no candidate is safe in this sense, unless he clears the honour line, 1,720, by a number equal to four times the probable discrepancy between examiners, which is 2.5 per cent. of 1,600. Then in order to be quite safe, a candidate must obtain at least 1,880 ($= 1,720 + 160$) marks. But only *seventeen* out of the fifty successful candidates obtained that number of marks. Only a third part, therefore, of the successful candidates are certainly deserving of success. If we prefer to drive nearer the precipice, and are content with odds of 50 to 1 against mischance, the number of the elect is not materially increased. The limit of safety is lowered from 1,880 to 1,860, and the number of the safe is raised from seventeen to nineteen.

Or take the examination recorded at p. 168 of the same volume, for twenty-four clerkships. By parity of reasoning it appears that five out of the twenty-four enjoy the higher degree of safety.

³ The sort of difference which would occur if all the men had been measured in their boots by one sergeant, in their stockings by another sergeant, would not be fatal to our argument—supposing the heels of military boots to be all of the same height.

The betting against the displacement of the man who is seventh from the top is about a two-florin piece to a penny. These estimates of the element of chance are based on the discrepancy observed between the marks assigned by the same examiner at different times; a datum which may be expected to be in general less than the discrepancy between different examiners.

Reasoning from general principles of human nature, no one would have been surprised if a lady agreed better with herself than with her friends and colleagues. This reasonable presumption is not very strikingly verified by the facts on the present occasion. The statistics cited on a former page, consisting of marks given by several learned ladies to the same papers in geometry and history, seem to evidence a discrepancy not much more serious than that which was found to exist between Mrs. Bryant and herself.⁴ Altogether we seem justified in putting provisionally as the measure of accidental discrepancy in the examination of the higher work in high schools, a probable error of 3 per cent. on a sum of 10 marks given to papers of this description. The reader will recollect that a probable error of 3 per cent. (in an aggregate mark) implies a possible though very improbable discrepancy of 12 per cent.

A higher degree of uncertainty is reached when, passing from school to university, we compare the marks given to the same work by different examiners in an examination for the classical Tripos. Some hundreds of such comparative marks have been submitted to me by the kindness of an academic friend. Having scrutinised these extensive statistics with great care, I can with confidence attribute to the compound mark under this category a probable error of about 4 per cent. This estimate is based on a comparison of the marks given by two examiners to one hundred and fifty papers, consisting partly of composition in Greek and Latin, partly of translation from the classical authors.⁵ A rather lower estimate of divergence is yielded by 90 pairs of marks in subjects like history, philology, and grammar at the same examination for honour.

The divergence proves greater, when we consider classical composition by itself, unmixed with subjects like translation, where there is not so much room for diversity in taste. Under this head I have scrutinised three sets of marks given by three examiners to a set of seventy-five papers. Two of the examiners run fairly well abreast, now this, now that one foremost, but with little difference on an average, and in the general scale of their marking. But the third examiner, like the hind wheel of the yoke, keeps constantly in the rear. I have thought it best, in this and similar cases, not to take account of such "constant" errors, as

⁴ At least, if in her case we do not make that correction of *scale*, for which the other experiment does not afford materials.

⁵ These statistics were adduced in my former paper "On the Statistics of Examinations," *Journal of the Royal Statistical Society*, 1888, p. 613. The "probable error" there considered is by definition less in the ratio of $1:\sqrt{2}$ than the "probable discrepancy" (between any two examiners) which is now under consideration.

they may be called; partly because such a difference of scale, when considerable, would probably be corrected by those whose business it is to co-ordinate the marks given by different examiners; and chiefly because a depression (or elevation) which affects all competitors equally does not affect the *relative* position of any. Acting upon this principle, I pushed up the depressed set of marks by 20 per cent.,⁶ so as to bring them up to the level of the other two sets. Then, comparing the marks thus elevated with either of the two other sets, and comparing those two *inter se*, found much the same coefficient of divergence, namely, that which may be expressed as a probable error of 5 per cent. on the sum of the 10 marks.

To this element of chance the Greek composition seems to contribute rather more than the Latin. Most of the "shining instances," of extreme disparity in marks given to the same work are in Greek, especially Greek verse. It may be well to record, as showing the accidents to which examinations may be liable, that out of 90 triplets of marks⁷ in composition (Greek and Latin verse and prose), the severer examiner is as often as not distanced by one of his colleagues to such an extent that one mark is double the other. Fourteen times out of ninety, one mark is three times as great as another given to the same work. Four times the excess is in the ratio of 5 to 1. And once the severer examiner exceeds his more lenient colleague in the ratio of 16 to 1. These graver discrepancies may no doubt be obviated by properly correcting the scale of the severer examiner. Still the effect of difference in scale, and the efficacy of correction, may easily be exaggerated. It may surprise even experts to hear that, as between two examiners, A and B, who upon the whole are fairly well abreast, occasionally A is ahead of B, and B ahead of A, to the extent of 50 per cent.

It is to be observed that the divergence in the marks of the same Latin prose by different examiners, referred to in an earlier page (469), is not very considerable, as compared with the experience of the Tripos Examination in composition; although the piece of prose by all accounts was rather difficult to appraise (like one of Macaulay's characters, a mixture of virtue with glaring vices); and although the divergence may in this case be swelled by a difference of *scale* which it is not possible to detect. A scrutiny of the 28 marks which have been obtained yields a probable error of 4·5 per cent. on a decade formed of similar marks.

It is a striking circumstance that the uncertainty in the marking at the Cambridge Classical Tripos is much the same as the uncertainty in the marking of Philosophy at the Oxford Final Honours, in *Literæ Humaniores*. I have been allowed to inspect some hundreds of pairs and triplets of marks given by different examiners to papers on Logic and Moral Philosophy at this examination. Assuming that the mysterious symbols employed to denote the candidate's place, viz., a_+ , a , a_- , β_+ , β , β_- , &c.,

⁶ I tried two methods of elevation by adding a constant sum, or a constant percentage of each mark, without very marked difference of result.

⁷ Fifteen, in addition to the seventy-five triplets which I subjected to a closer scrutiny.

may be replaced by a series of equidistant numerals, as thus: 100, 90, 80, 70, 60, 50, &c.; I am able to deduce from a scrutiny of marks given by different examiners to the same work, a numerical co-efficient representing the probable divergence between any two examiners. Expressing this measure as a percentage of the average mark of all the candidates who are up to a third class standard (above γ_- , corresponding to my 20), I find almost the same coefficient as for the Cambridge Classical Honours. The result, however, varies much if the line intended to exclude those who, so to speak, are out of the betting, is drawn differently. If we confine our attention to those who are in or near the first class, the fluctuation in the estimates is markedly less.⁸ In fact it is as small as any which I have observed in the case of subjects more elementary and precise.

This result is very striking, and certainly points to the conclusion that the Oxford method of selecting the best men is much

⁸ The statistical worth of my results is evidenced by the following statement, which relates, as explained above, to papers on Logic and Moral Philosophy at the Oxford Final Examination for Honours in *Literæ Humaniores*; the actual symbolical marks having been commuted into numerals. The statistics are furnished by the examinations in two consecutive years:—

Batches in Order of Occurrence.	Number of Papers Marked.	Number of Marks Inspected.	Average Mark.	Mean Deviation per Cent.
I	53	142	52·5	22
II	53	159	52·3	20·8
III	53	159	52·3	20

The order of occurrence is accidental, being alphabetical. The second and third batches consist entirely of triplets, each paper having been marked by three examiners. In the first batch there are thirty-six triplets and seventeen pairs. The mean deviation per cent. in the case of the triplets is found by adding the squares of the differences between the average of each triplet and its constituents, doubling that sum, dividing by the number of triplets, extracting the square root, and expressing the result as a percentage of the average mark. The analogous method of finding the mean deviation in the case of pairs of marks given to the same work is stated in the text (p. 651). In the case of a mixture of pairs and triplets, a cross between the two methods has been adopted—represented by the following formula. Let m be the number of pairs, n of triplets.

Sum of squares of residuals = $(m + 2n) \times$ mean square of error,

where the mean square of error is half the mean square of deviation, which is our *quæsitum*.

The greater steadiness of the marking in the case of the better work is evidenced by the following statement. Confine attention to the candidates who are in the neighbourhood of, or above, β_+ —a symbol which I suppose corresponds to what in my day was called a “showy second”—according to the numerals here adopted, those whose average is above 65. The mean square of deviation for 30 of this category taken in the random order in which they occur is 11 only—about half the corresponding coefficient for the general case where second and third class are included. If we limit the class under consideration to those at or above 75 in the neighbourhood of the first class, the steadiness of the marking is still

more certain than that which is adopted in our Governmental examinations, where the prizes are awarded to those who obtain the highest aggregate of marks in different subjects. It is for the sake of illustrating the latter method that I have reckoned the element of chance at the Oxford examination in a manner which does not do justice to the sterling quality of the first class. At an examination like the India Civil Service, the successful candidates, especially those near the under line which separates success from failure, would often build up their aggregates by marks which in some subjects are at or below the average. Therefore in estimating the uncertainty of the aggregate, we must not confine our attention to the first-rate marks in the particular subjects. It is to illustrate by analogy the uncertainty in such marking I have estimated the discrepancy between the judgment of the Oxford examiners with reference to the average candidate. But it is to be remembered that the Oxford examiners do not proceed by simply aggregating marks, and accordingly that the entry in the table at p. 650 does not apply to their verdicts.

A higher coefficient has been extracted by operating on 400 pairs of marks in English composition. With reference to this, the finest piece of statistics to which I have to refer, it may be well to describe the calculation in some detail, so that the reader may appreciate the worth of such results.

First it was necessary to find the difference between the two marks given to each of the 400 pieces of composition. Then these 400 differences had to be squared. These squares were then summed and divided by the number thereof, 400; which quotient, namely, 67, was taken as the proper measure of the accidental discrepancy which is apt to occur between the marks given by the two examiners to any one paper.

Here I pause to observe, that no one who has the slightest acquaintance with statistical method can doubt but that the result obtained represents a real coefficient and true average; when it is stated that the corresponding figures obtained for the first, second, and third batch of 133 observations are respectively 63, 67, and 72. Batches of forty present a convergence quite visible, though less striking. But the hasty theorist must not expect that any scraps of statistical matter will be sufficient to yield the true characteristic. This kind comes not out but by the prolonged application of the proper tests to large masses of figures.

Returning to the coefficient which we obtained as what might be called the mean error,⁹ I have thought it proper to reduce more striking. These results are indicated in the following table, where some, but not all, of the second batch are included in the first:—

Number of Papers.	Average.	Mean Deviation per Cent.
30	71·5	11
21	79	10

⁹ In a technical sense, distinct from the common, or garden, *average*.

this measure, by taking into account the fact that there is a difference in the level or scale of the two sets of marks amounting to 10 per cent. of the average mark. The diminution of fortuitous discrepancy which is effected by such a correction, is much less than might have been supposed by persons unacquainted with this kind of investigation. The coefficient 67 is reduced only to 64.

This reduced coefficient is then expressed as a percentage of the average mark for the whole set of papers, namely 227. The mean error 64 is about 28 per cent. of this average. This percentage, divided by $\sqrt{10}$, gives the corresponding percentage for compound marks, formed by adding 10 of the same character as those under consideration. From this datum—in virtue of the theorem that compounds fluctuate according to the normal law of error—we can deduce the probability that there will occur any particular degree of discrepancy between the marks given by two sets of examiners, similar in calibre to those who have been observed, to the same set of ten papers. In particular we can deduce as the most familiar expression of our result, that the discrepancy as likely as not to occur is 6 per cent. Then, armed with the *gens d'arme's* hat, like Raiko with the helmet given by the good spirit, in the Japanese picture story—we can advance to the sort of conclusions which we are seeking; for instance, that a height of 24 per cent. above the honour line, not quite, or only just, excludes the possibility of success being accidental.

We have not reached the highest pitch in the gamut of fallibility. I have still to adduce some statistics relative to a public examination in speculative subjects, which was not guarded by organisation and tradition so carefully as the Oxford Examinations in Philosophy. From a scrutiny of some 70 pairs of marks, given by two examiners in such a subject, I have found that the probable discrepancy on a decade of such marks would be as much as 8 per cent.¹⁰

It may be useful to resume in the form of a table these determinations of the discrepancy as likely as not to occur between decades of marks assigned by two sets of ten examiners to the same ten papers. The reader will recollect that each of these coefficients requires to be multiplied by at least 3·5 or 4, in order to obtain the height above the honour line at which a candidate's position may be regarded as irreversible. I add in brackets the number of marks which in each case I have scrutinised in order to determine the appropriate constant, the breadth of the statistical basis on which each determination rests:—

High school, sixth form, geometry	(82)	2·5
Marked by the same examiner at different times.		
High school, sixth form, geometry and history	(160)	3
Marked by different examiners.		

¹⁰ A still higher coefficient is obtained by the comparison of two sets of marks given to nineteen papers in English composition, which are published in *Nature*, November, 1889. But this piece of statistics is too short, considering its heterogeneity, to afford a sufficient basis of induction. Still *valeat quantum*, as showing what discrepancies between the marks of single papers are possible.

Cambridge honours in classics.....	(480)	4
Composition and translation, history, grammar (mixed).		
India civil service, Latin prose	(28)	4·5
Oxford honours in Literæ Humaniores, philosophy		
(alone)	(460)	4·5
Cambridge honours in classics, composition (alone)	(225)	5
English composition	(800)	6
Speculative science	(140)	8

We have now to select from, or to combine, these results so as to obtain a measure for the element of chance in any of our public examinations. Inclining to the side of moderation, I should propose the lowest of the estimates which have been based upon a comparison between the marks given by different examiners, viz., a probable discrepancy of 3 per cent. for the average public examination—3 per cent. of the average mark obtained at that examination.

Adopting this datum, I am able to answer the following question with respect to any examination of which the marks are published: How many of the candidates placed are quite safe, in this sense that, if their work had been marked by another equally competent set of examiners, the failure of any assigned one of the successful is a very unlikely event, as unlikely as getting a run of six or seven heads or tails at pitch-farthing.¹¹ The public examinations in which I have sought the answer to this question, fall into three categories, the India Civil Service, the Army, and the Home Civil Service Clerkships of the second order. I find the element of chance in these public examinations to be such, that only a fraction—from a third to two-thirds—of the successful candidates can be regarded as quite safe, above the danger of coming out unsuccessful if a different set of equally competent examiners had happened to be appointed. A corresponding proportion of the successful—from two-thirds to one-third—must be described as unsafe. A rather larger *number*—though much smaller *proportion*—of the unsuccessful candidates would have a chance of succeeding at a re-examination; for instance, at three clerkships examinations, 25, 43, 72, out of a total number of unsuccessful respectively, 126, 102, and 121.

This question may also be asked: What number of displacements is most likely to occur in the event of a re-examination? The answer in some cases which I have scrutinised proves to be about a *seventh part* of the successful. Thus, where fifty clerks were appointed, it may be expected—the most probable event is—that seven would be displaced by re-examination of the same work. Out of twenty-four clerks the number was five. The proportion appears to be much less in some other examinations. For instance, at the examination for the India Civil Service in 1875, out of thirty-seven successful candidates most probably three would have been displaced in a re-examination. For the army examination the proportion of probable displacements seems to be considerably less. Some typical answers to these questions are exhibited in the following table:—

¹¹ Odds of 100 to 1. Corresponding to a height above the honour line of 3·5 times the “probable discrepancy.”

1 Designation.	2 Reference to Report of Civil Service Commission.	3 Total Number of Candidates.	4 Number of Suc- cessful.	5 Honour Line.	6 Median.	7 Probable Dis- crepancy.	8 Improbable Dis- crepancy.	9 Limits of Uncertainty.		10 Number of the Uncertain.		11 Proportion of the Successful quite Safe.	12 Most Probable Number of Displace- ments.	13 Proportion of the Successful most Probably Displaced.
								Upper.	Lower.	Suc- cessful.	Unsuc- cessful.			
Clerks No. 2	XX, p. 168	150	24	1,850	1,600	48	168	2,018	1,682	19	25	.2	5	.2
Clerks No. 2	XX, p. 180	171	50	1,720	1,600	48	168	1,888	1,552	33	49	.34	7	.14
India Civil Service	XIX, p. 522	206	38	1,055	674	27	95	1,150	960	15	14	.60	3	.08
India Civil Service	XX, p. 431	198	37	1,076	740	30	105	1,181	971	13	16	.65	3	.08
Cavalry and in- fantry	XIX, p. 328	329	152	2,872	2,737	82	287	3,159	2,585	32	25	.8	45	.03
Cavalry and in- fantry	XX, p. 245	351	110	3,301	2,560	77	269	3,570	3,032	29	23	.74	4	.04

In this table the *first* column designates a service to which appointment is made by competitive examination. The *second* column contains references to the reports of the Civil Service Commissioners, in which are published the marks given at public examinations. The reports referred to are in the twenty-second volume of the Parliamentary Papers for 1875 and 1876. The *third* column gives the number of candidates at each of the examinations referred to in this table. The *fourth* column gives the corresponding number of successful candidates. The *fifth* column contains the mark of the lowest successful candidate at each of the examinations, or of the highest unsuccessful, or some intermediate number (figures differing from each other by quantities which may be neglected). The *sixth* column contains the total marks which occupy the half-way position in the order of merit at each examination. Thus at the second examination (referred to in the second row of the table), there being 171 candidates, the total marks which is eighty-sixth in the order of merit is 1,601; in round numbers, 1,600. At the first examination, the number of candidates being even, viz., 150, the median is intermediate between the seventy-fifth mark, which is (in the descending order of merit) 1,601, and the seventy-sixth, which is 1,597; in round numbers, 1,600. In the *seventh* column each entry is the discrepancy which is as likely as not to occur between the sum of ten marks given to any candidate's papers at the examination referred to, and the sum of the marks which might have been given to the same work by any other set of equally competent examiners. This figure is calculated from the formula: mean discrepancy = mean error $\times \sqrt{2} \div .477$ (or mean error $\times .67 \dots) \div \sqrt{10}$. Here 10 is the number, or greater than the number of the papers answered by a candidate. The other figures are explained in the books on probabilities. The mean error is a coefficient determined by observation in the manner described in this paper (above, p. 651). For most of the examinations the lowest figure derived from observation, viz., 3, has been taken for the probable discrepancy. For the India Civil Service the higher coefficient 4 has been used; partly because that figure actually has been observed for—or rather deduced from observations relating to—that examination; partly because the examination includes more advanced and speculative subjects than the examinations for which the coefficient 3 was found. The *eighth* column gives the discrepancy which in each case is very unlikely to occur; against the occurrence of which the odds are about 100:1. The improbable discrepancy is by the theory of errors equal to the probable discrepancy multiplied by 3.5 nearly. In the *ninth* column each upper limit is formed by adding the improbable discrepancy to the honour line, the lower limit by subtracting the same figure from the same. In the *tenth* column the number of the successful who are uncertain is ascertained by counting the number of candidates whose marks are between the honour line and the upper limit of uncertainty; the number of the unsuccessful who are uncertain is found by counting the number of candidates between the honour line and the lower limit of uncertainty. To form the *eleventh* column subtract the number of the uncertain successful from the total successful. The remainder is the number of those who are "safe" in this sense that for any assigned one of them the odds of his being displaced upon a re-examination of his work are about 100 to 1. The number of the safe dividend by the number of the successful at each examination is entered in the *eleventh* column. The laborious formation of the *twelfth* column is described at the end of the companion paper (*Philosophical Magazine*, August, 1890). To form the *thirteenth* column divide each entry in the *twelfth* column by the corresponding entry in the *fourth*. The average of the figures in the *thirteenth* column, relating to the same class of examination, gives the proportion of the successful candidates which would most probably be displaced upon a re-examination of their work—most probably in the same sense as we may say that the average death-rate represents the proportion of the population who will most probably die in any proximate year. Thus in the case of the India Civil Service we may say—or rather might have said at the period to which the statistics relate, twelve years ago—that the most probable proportion of displacement—the degree of failure of justice which may be expected—amounts to 8 per cent. of the

successful; or rather, $8 \div \sqrt{2}$, say 6 per cent., if we define the just verdict as that which would be found by taking an average of the results obtained by a variety of competent examiners.

Another question which may be asked and answered is this: Of all the numerous distinctions which are drawn by arranging candidates in an ostensible order of merit—distinctions by which the seniority and future advancement of the successful candidates are determined—how many are founded on real differences in proficiency? The answer to this question, so far as it relates to the distinction between candidates who are adjacent in the order of merit, is that hardly any such distinctions are real. Differences of marks on the strength of which one civil servant is promoted above his fellow, correspond to only the faintest probability in favour of a real superiority. Occasionally, but by no means invariably—in examinations decided by an aggregate of marks—the senior or the first two or three break away from their neighbours by an interval which cannot be ascribed to accident. But between the adjacent men among the rank and file the distinction is hardly ever real. The calculus of probabilities proves to be a leveller of the same sort as the aristocratic reformer in one of Disraeli's stories, who was for abolishing all distinctions of rank, except indeed the order of dukes.

The moderation of these conclusions may be shown by several considerations which, though somewhat abstruse and technical, should be weighed by those who would fully understand this important subject. First, the estimates which I have formed may to a large extent be accounted for by the simple and inevitable fact that the human mind is not capable of perceiving very fine degrees of merit.¹²

The following is a second consideration, showing the moderateness of my estimates. In calculating the error of a compound mark, I have invariably complied with the regulation theory. I have acted on the principle which I believe was first distinctly announced on the occasion of Napoleon's invasion of Egypt. When it was proposed to ascertain the height of a pyramid by measuring the height of each step and adding the measurement, one of the savants objected that the error incident to each measurement would be multiplied by the number of them. "No," said the celebrated Fourier, "by the *square* root of that number." According to this principle I have reasoned that the percentage error incident to a sum of 10 marks is less than the corresponding error of the components in the ratio 1: $\sqrt{10}$. But mathematics can seldom be applied so perfectly, but that facts will lag a little behind theory. In statistics relating to human affairs it rarely happens that the mutually compensating errors so nicely telescope into each other as to effect the regulation degree of shrinkage. There is often an intractable minimum of what may be called constant error.

At any rate the divisor which I have used, namely, $\sqrt{10}$, is too large for this reason, that at most of the public examinations to

¹² See the former article, *Journal of the Royal Statistical Society*, 1888, p. 603.

which I refer, the number of papers is not so great as ten. The average is rather, I think, about seven. Thus my estimate of safety would be exaggerated, my estimate of accident being underrated in a ratio of about 4 to 5.

Again, I have in every case that permitted reduced my estimate by eliminating differences in the scale or general level adopted by the examiners under comparison, upon the assumption that such differences would cause no derangement in the *relative* position of the candidates. But that assumption is somewhat precarious. Candidates do not always take up the same ten or seven subjects. Thus the final order would be affected by the scale on which the examiner in each subject marks.

Moreover, in so far as there is a displacement of the marks in particular subjects not common to all the candidates, our hypothesis that the honour line may be regarded as constant, whatever the change of examiners, no longer holds. In any case it can only hold approximately. But the effect of relaxing this hypothesis is to screw up the estimate of error.

In fine we have kept in general on the safe side in generally taking for the basis of our computations the lowest observed degree of discrepancy, namely, 3 per cent., for all the marks. Where Latin composition, English composition, and still more hazardous subjects enter, a higher coefficient should certainly be employed.

It may be added that we have taken no account of what may be called extraneous elements of chance, such as the possibility of the candidate being out of sorts on the day of the examination, or of the questions being unfavourable to him.¹³

On the other hand, it is to be admitted that some inaccuracy is caused by our rather arbitrary selection of the class of marks upon which the estimate of discrepancy is based. It has been seen that at the examination in *Literæ Humaniores*, if we confine our observations to those who are in the neighbourhood of the first class, a lower coefficient of percentage error is obtained than if we take in the second and third classes.¹⁴ If we were to take in also the fourth class, the estimate might still be further heightened. Similarly the highest estimate of error which we have found, that which relates to *speculative subjects* (at a not very carefully organised examination), is reduced from 8 to 6 or 5 per cent. if no account is taken of the marks below a certain standard.

The proper definition of the class to be selected is that it should represent those who contribute to the aggregate marks whose uncertainty is under consideration.¹⁵ But this class of contributories will differ (in the same subject) at different examinations; at Woolwich, for example, where the honour line is often below the mean mark, compared with the India Civil Service, where the honour line in the published statistics is always high above the mean mark. The materials for taking account of such differences exist, but I have not always fully utilised them. Accordingly, notwithstanding the perfection of some of our statistical data, the conclusions must be regarded as accurate only on an average, and as affording but a

¹³ See the former paper, *Journal of the Royal Statistical Society*, 1888, p. 615.

¹⁴ See note on p. 651.

¹⁵ See note on p. 650.

general idea of the order of error incident to the results of examinations. It is possible that the uncertainty of some particular examination may have been exaggerated.

Having thus tested the theory, I now proceed to certain corollaries. The question will long since have occurred to some readers, whether the discrepancies between marks might not be greatly reduced, by either instructing examiners beforehand as to the *scale* to which they should conform, or actually pushing up or down *en bloc* a set of marks which on an average are below, or above, the proper level. The answer is that this sort of adjustment is much more difficult, technical, and precarious, than is commonly supposed.

The general theory governing the subject is that the marks given by one examiner to several papers, are apt to be grouped according to the same pattern as marks given by several examiners to one paper. That pattern is the form of the *gens d'arme's* hat, which we have already studied. Its double use might be illustrated by the analogy of physical measurement. The measurement of a class of men by the same instrument, and the measurement of a single man by several instruments are apt to conform to the same typical law of error.

This comparison of stature to mental eminence suggests some caution. It is true that the statures of men belonging to the same nation are grouped according to *the* law. It is fulfilled for instance with almost ideal perfection by the heights of 600,000 Italian conscripts tabulated by Signor Perrotto. But what is true of conscripts is not always true of soldiers. The omission of those below a certain height deforms the symmetrical pattern. I am informed by competent authorities that something of this sort occasionally occurs in the statistics of marks; and that in other ways the ideal pattern is liable to be distorted. My own experience, derived from a scrutiny of some thousands of marks published by the Civil Service Commissioners, is that the law is fairly well fulfilled.

Suppose that a recruit sergeant had measured a large batch of, say 1,000, conscripts with a defective measuring rod; when his returns were sent into head quarters it would be very easy to correct the mistake. It is proved by copious experience that the average height of any large batch of Italian conscripts is 5 ft. 2 in. If then any recruit sergeant in King Humbert's army sent in a set of 1,000 measurements, with an average of 5 ft., it might perhaps be presumed that his measuring rod was defective by two inches; and then all his returns would be increased in the ratio 60:62. If however there was reason to think that the conscripts were measured not in stockings, but in boots with heels two inches high, then it would be proper to reduce all the returns by subtraction rather than division. The sort of difficulty thus indicated is much greater in the case of psychical measurement.

The general idea is that a set of marks *ought* to conform to a *gens d'arme's* hat of a certain definite make, which may be described as being correct or conventional; and that it *does* conform to a *gens d'arme's* hat of another make. The problem is how to transform

the actual to the ideal shape. It may be necessary to crumple up or spread out the observed hat. For this purpose it is necessary to have as it were two fixed points, with which certain points in the observed hat may be made to coincide. The practice adopted in some public schools is to take the extremities as the fixed points, and so alter the given shape that its extremities may coincide with certain points conventionally fixed. Let these points be 0 and 100. It is required to reduce the set of marks given to a class by an examiner, so as to fit the series in between 0 and 100. Suppose that in the original uncorrected set the extreme figures are 40 and 90. The tract between 40 and 90 is, so to speak, stretched in both directions in such wise that the original 40 becomes 0, and the original 90, 100. Any intermediate mark has its new place determined by a simple proportion. Thus the original 65, midway between the extremes 40 and 90, becomes 50.

The objection to this plan is that it determines the position of the whole hat by the position of the rim; which is the least steady part, in fact consisting of a sort of lace or ribbon which flutters about irregularly. It would be better to select as the fixed points two nearer the centre of the hat, say about the positions in which ventilating holes are sometimes inserted in hats. This principle has been fully stated and illustrated in the former paper.¹⁶

I dare say that the common practice works well in particular cases, where it has been empirically applied. But it is founded on a principle which cannot safely be extended. It would be better, as I understand is done at one public school, to take as the fixed lower extremity the mean of the last and penultimate boy, and a similar mean value for the upper extremity. It would be still better to take in the antepenultimate boy, and the one who may be called the proantepenultimate.

It may be objected that on the proposed plan no room is left for taking account of merit or demerit. Thus in the instance given, it might happen that the candidate who actually obtained 40 at the supposed examination, ought on the reduced scale to receive less than nothing, a *negative mark*, if the demands of proportionate justice are to be exactly satisfied. This is a matter to be settled by the authorities who fix the permanent scale. On theoretical grounds I should be disposed to admit both negative marks and marks which are *transcendent* or in excess of the maximum. The present system of prescribing a fixed *maximum* is open to some of the strictures which I have made. Hard and fast rules, without reference to the merits of particular cases, are dangerous. Perhaps the best general principle is that the "quartile" and "median" should be fixed for each class of examination by a committee of permanent officials, in the light of an extensive experience in *pari materia*; that the examiner on each occasion should be expected to furnish a set of marks roughly conforming to the pattern thus prescribed; and that any adjustment which the marks furnished may seem to require, should not be performed without the concurrence of the acting examiner, who has scrutinised the merit of each particular candidate.

¹⁶ *Journal of the Royal Statistical Society*, 1888, p. 622.

However refined our methods of correction, we must not expect to eliminate altogether the element of chance. There will remain an incorrigible minimum of uncertainty. In some of the cases which I have put in evidence, I am satisfied that the estimate which I have given could not be substantially reduced by any method of correction.

"Whatever it is impossible to correct is alleviated by our bearing it patiently." We must accommodate ourselves as best we can to the existence of an unavoidable uncertainty in examinations. One consequence of this admission is that the Oxford system of arrangement in classes is seen to be preferable to the old Cambridge system of arrangement in an ostensible order of merit, a system which is still prevalent at many of our public examinations. Of course even in defining a class there is some uncertainty. A line must be drawn somewhat arbitrarily. But, we may ask, is there not much in the principle of the Irishman who, when suspected of inaccuracy, protested that indeed he told as few lies as possible? The opposite principle may seem to have animated those who instituted the arrangement in an order of merit. When N candidates are so arranged, there are in general $(N-1)$ statements with respect to the relative position of each consecutive couple, which statements are not indeed false, but almost wholly unfounded. Now by bracketing these N candidates in one class, we reduce the number of unfounded statements to the small number of those who may be said to be just on the line.¹⁷ Above that limit the statement that a classed candidate deserves his class is not indeed certainly true, but getting on for truth; the shades of doubt fading according to a regular law into the light of moral certainty.

Still there remains an irreducible minimum of hardship inflicted on those who, having just approached the gates of Paradise, are excluded, though in all probability not a whit worse than those who are just included. It is well worth considering whether something might not be done to mitigate this hardship. One idea would be to re-examine all the last of the successful and the first of the unsuccessful, and to place those who were best on an average of the two examinations. An additional examination, not in similar subjects, but in physical qualities, has been proposed by Mr. Galton.

Perhaps here, as in the case of other grievances, mere publicity is a sufficient, and the sole attainable, remedy. The general recognition of the element of chance in examinations would mitigate the disappointment of those who for want of a few marks are either altogether excluded from the class of the successful, or compelled without preferment to take a low place in that class. With the view of rendering this remedy operative, it might be worth while at least entertaining in idea a startling proposal which has recently been made by one of those who have written on the evils of examination. It is proposed to revert to the ancient

¹⁷ More exactly not distant by a sensible fraction, say a half, of the probable error incident to a mark; in some of our public examinations within twenty marks of the line.

practice of selection by lot. The plan, as I understand, is that first a large class of candidates should be segregated by a light examination. Then the candidates thus selected are to raffle for the prizes.

To this proposal it may be objected that it is apt, as indeed it was intended, to relax application to study. But it is worth considering whether there is not a modification of the scheme which might promote justice without discouraging industry. Take all the candidates who, coming out either among the last of the successful or the first of the unsuccessful, are found by the principles explained in these pages to be either not certainly deserving, or not certainly undeserving. Distribute the vacant places among these candidates, not simply by lot, but according to a graduated lottery of the following description: Let each candidate receive a number of tickets proportional to the chance—to be accurately ascertained by the calculus of probabilities—that he is really deserving, that under a jury of competent examiners he would have been placed. Thus he who comes out in the examination with so many marks below the line might receive only one ticket at the lottery; he who comes out high among the successful should receive 100 tickets. The State would not lose by this procedure, since *ex hypothesi* in the long run the same proportion of really deserving candidates would be appointed. The sense of injustice which now rankles in the breast of disappointed individuals would be mitigated. The adoption of the plan would do more to bring home to the public mind the aleatory character of examinations than even an article in the *Journal of the Royal Statistical Society*. However it is rather for the sake of facilitating the conception of my theory than as a serious practical proposal, that I have entertained the idea of sortition.

The theory will have been imperfectly understood if the element of certainty as well as the element of chance in examinations has not been brought into view. To recur to our old metaphor, marks as measures of proficiency, act like an uncorrected barometer, one in which the height of the column corresponds only roughly, and on an average of many measurements, to the pressure of the air, owing to oscillations caused by violent changes of temperature. That examinations are a very rough test of merit, but they do serve to distinguish excellence in certain qualities, is a conclusion which recommends itself to practical and sensible persons. It is indeed so evident that the reasonings by which it has been confirmed may seem otiose.

I submit however that mere common sense, without the calculus of probabilities, is not competent adequately to define the limits of chance and certainty. Common sense might be embarrassed in defending its position against the awkward fact which has been adduced, that even in the best regulated examinations one examiner occasionally differs from another to the extent of 50 per cent.; for common sense cannot fully appreciate that mutual compensation of errors in virtue of which a peculiar stability attaches to aggregates of marks. Again, without the analogy which errors of observation lend, it is difficult to know exactly where to look for the element of chance. It seems to be a general impression that

the principal cause of uncertainty in the results of examination is the want of a uniform standard for the papers set. I am reminded of a little scene which I once witnessed at an examination. As the presiding professor was distributing the examination papers, a pert candidate, glancing at the paper which he had received, said in a patronising tone, "Very pretty questions, Sir." "O yes," retorted the examiner, "but the answers are much prettier." Using a similar antithesis, I would assert that the setting of questions is no doubt very casual, but that the marking of answers is even more casual, especially where literary taste and speculative power are among the qualities to be estimated. Again, even those whose line of study has led them to expect diversity of judgment, could not without statistical verification anticipate to what extent the operation of personal idiosyncrasy could be allowed for and eliminated. Some eminent scholars emphasise as a principal cause of diversity the different idea which examiners may form of what is to be expected from the candidates, the different *scales* employed in measuring proficiency. The analogy of "personal equation" is employed very recklessly; the personal equation in physical measurements relating to a constant difference between two observers which comes out on an average of a great number of marks, and just because it so comes out, can be eliminated. It is not, and could not prior to experiment, be recognised how large a portion of the element of chance in marking is of the nature of what Fechner, with reference to his classical experiments on the accuracy of the senses, calls "pure error;" an incorrigible randomness of deviation, now in this direction, now in that, to be carefully distinguished from that constant error which admits of correction. The "pure error" in most of the statistics which I have scrutinised is by far the more serious element. Thus, in comparing the marks given by two examiners to a set of 400 papers in English composition, I find a divergence which, according to our phraseology, may be expressed as a "mean error," amounting to about 30 per cent. of the average mark of the whole 800 by 227. If I take account of the constant difference; the personal inequation, if I may so say, between the two examiners, amounting to about 20—that is almost 10 per cent. of the general average 227—I find that the huge estimate of error is hardly appreciably reduced by pushing up or down one set of marks *en bloc*. The measure of accidental discrepancy might perhaps be reduced by such a process from 30 to 28 per cent. For these and similar reasons, I submit that the technical treatment of the subject is not to be despised by those who would discover how the element of chance may as far as possible be eliminated, and in what cases our only course is to accommodate ourselves to inevitable uncertainty.

But even apart from immediate practical use, it may be that a *curiosum* in psychological statistics deserves attention. It is to be hoped that the system of competitive examination has not so entirely extinguished liberal curiosity, but that a leisure hour may be spared for a subject which is outside, though it touches on, the curriculum.

To examiners at least it will be interesting to test the accuracy of the instrument with which they work. The statistical study may

beguile the monotony of their task. The "charm severe of numbers" is celebrated by Wordsworth as

" Especially perceived when nature droops
And feeling is suppressed."

The poet is evidently describing in prophetic words the condition of examiners, and prescribing their solace. More tropically another inspired bard has indicated the paregoric use of an interest in statistics. In one of the beautiful pictures with which Homer has adorned the shield of Achilles, the ploughman of the good old times, as he finishes each furrow, and turns to begin a new one, is presented with a refreshing cup of honey-sweet wine. So they who plough in the modern metaphorical sense, may, in the pauses of their labours, be refreshed with the cup of statistical science, which I have endeavoured to sweeten.

II.—*Population of the United States by States and Territories, 1890.*

THE following is a reprint of the *Census Bulletin* No. 12, dated 30th October, 1890:—

" DEPARTMENT OF THE INTERIOR,

" CENSUS OFFICE,

" Washington, D. C., 28th October, 1890.

" Sir,—I have the honor to submit herewith a statement showing the population of the United States according to the eleventh census. The large clerical force and improved methods have allowed a very rapid progress in the compilation and tabulation of results, and this report will be followed within a short time by other bulletins relating to the population. The special work of the census is so far advanced that bulletins relating thereto will now be issued at frequent intervals during the next few months. The field-work of the census is nearing completion, and by the end of this year will be practically finished. The work of tabulation is being rapidly pressed forward, in order to begin the publication of the volumes as soon as possible.

" The population of the United States on 1st June, 1890, as shown by the first count of persons and families, exclusive of white persons in Indian territory, Indians on reservations, and Alaska, was 62,480,540. These figures may be slightly changed by later and more exact compilations, but such changes will not be material. In 1880 the population was 50,155,783. The absolute increase of the population in the ten years intervening was 12,324,757, and the percentage of increase was 24·57. In 1870 the population was stated as 38,558,371. According to these figures the absolute increase in the decade between 1870 and 1880 was 11,597,412, and the percentage of increase was 30·08.

" Upon their face these figures show that the population has increased between 1880 and 1890 only 727,345 more than between 1870 and 1880, while the rate of increase has apparently diminished from 30·08 to 24·57 per cent. If these figures were derived from correct data, they would be indeed disappointing. Such a reduction in the rate of increase in the face of the enormous immigration during the past ten years would argue a great diminution in the fecundity of the population or a corresponding increase in its

death-rate. These figures are, however, easily explained when the character of the data used is understood. It is well known, the fact having been demonstrated by extensive and thorough investigation, that the census of 1870 was grossly deficient in the southern States, so much so as not only to give an exaggerated rate of increase of the population between 1870 and 1880 in these States, but to affect very materially the rate of increase in the country at large.

"These omissions were not the fault nor were they within the control of the Census Office. The census of 1870 was taken under a law which the superintendent, General Francis A. Walker, characterised as 'clumsy, antiquated, and barbarous.' The Census Office had no power over its enumerators save a barren protest, and this right was even questioned in some quarters. In referring to these omissions the superintendent of the tenth census said in his report in relation to the taking of the census in South Carolina: 'It follows, as a conclusion of the highest authority, either that the census of 1870 was grossly defective in regard to the whole of the State or some considerable parts thereof, or else that the census of 1880 was fraudulent.' Those, therefore, who believe in the accuracy and honesty of the tenth census—and that was thoroughly established—must accept the other alternative offered by General Walker, namely, that the ninth census was 'grossly defective.' What was true of South Carolina was also true, in greater or less degree, of all the southern States.

"There is, of course, no means of ascertaining accurately the extent of these omissions, but in all probability they amounted to not less than 1,500,000. There is but little question that the population of the United States in 1870 was at least 40 millions, instead of 38,558,371 as stated. If this estimate of the extent of the omissions in 1870 be correct, the absolute increase between 1870 and 1880 was only about 10 millions, and the rate of increase was not far from 25 per cent. These figures compare much more reasonably with similar deductions from the population in 1880 and 1890.

"Omitting from consideration those States in which the census of 1870 is known or is presumed to have been faulty, the rate of increase between 1870 and 1880 in the remaining States has been very nearly maintained in the decade between 1880 and 1890. Referring to the principal table of the bulletin, the census of 1870 is known or is presumed to have been deficient in nearly all the States of the south Atlantic and southern central divisions, while in the north Atlantic, northern central, and western divisions no evidence of incompleteness has been detected.

"The population of these three last named divisions in 1870, 1880, and 1890, the absolute increase for the two decades, and the rate of increase, are set forth in the following table:—

Year.	Population.	Increase in Population.	Percentage of Increase.
1870.....	26,270,351	—	—
'80.....	33,639,215	7,368,864	28·1
'90.....	42,693,682	9,054,467	26·9

"It will be seen that the absolute increase between 1880 and 1890 exceeded that between 1870 and 1880 by 1,685,603, and that the proportional increase was but 1·2 per cent. less.

Population of the United States in 1890, as compared with 1880 and 1870, by States and Territories, showing the Increase by Number and Percentages from 1880 to 1890, from 1870 to 1880, and from 1860 to 1870.

[The figures for 1890 in this table are not final, but are subject to revision.]

States and Territories.	Population.			Increase from 1880 to 1890.		Increase from 1870 to 1880.		Increase from 1860 to 1870.	
	1890.	1880.	1870.	Number.	Percentage.	Number.	Percentage.	Number.	Percentage.
the United States	62,480,540	50,155,783	38,558,371	12,324,757	24·57	11,597,412	30·08	7,115,050	22·63
North Atlantic division ...	17,364,429	14,507,407	12,298,730	2,857,022	19·69	2,208,677	17·96	1,704,462	16·09
Maine.....	660,261	648,936	626,915	11,325	1·75	22,021	3·51	1,364*	0·22*
New Hampshire	375,827	346,991	318,300	28,836	8·31	28,691	9·01	7,773*	2·38*
Vermont.....	332,205	332,286	330,551	81*	0·02*	1,735	0·52	15,453	4·90
Massachusetts	2,233,407	1,788,085	1,457,351	450,322	25·26	325,734	22·35	226,235	18·38
Rhode Island.....	345,343	276,531	217,353	68,812	24·88	59,178	27·23	42,733	24·47
Connecticut	745,861	622,700	537,454	123,161	19·78	85,246	15·86	77,307	16·80
New York	5,981,934	5,082,871	4,382,759	899,063	17·69	700,112	15·97	502,024	12·94
New Jersey	1,441,017	1,131,116	906,096	309,901	27·40	225,020	24·83	234,061	34·83
Pennsylvania.....	5,248,574	4,282,891	3,521,951	965,683	22·55	760,940	21·61	615,736	21·19
South Atlantic division ...	8,836,759	7,597,197	5,853,610	1,239,562	16·32	1,743,587	29·79	488,907	9·11
Delaware	167,871	146,608	125,015	21,263	14·50	21,593	17·27	12,799	11·41
Maryland	1,040,431	934,943	780,894	105,488	11·28	154,049	19·73	93,815	13·66
District of Columbia	229,796	177,624	131,700	52,172	29·37	45,924	34·87	56,620	75·41
Virginia.....	1,648,911	1,512,565	1,225,163	136,346	9·01	287,402	23·46	70,859†	4·44†
West Virginia	760,448	618,457	442,014	141,991	22·96	176,443	39·92	—	—
North Carolina	1,617,340	1,399,750	1,071,361	217,590	15·54	328,389	30·65	78,739	7·93
South "	1,147,161	995,577	705,606	151,584	15·23	289,971	41·10	1,898	0·27
Georgia	1,834,366	1,542,180	1,184,109	292,186	18·95	358,071	30·24	126,823	12·00
Florida	399,435	269,493	187,748	120,942	44·88	81,745	43·54	47,324	33·70
Northern Central division	22,322,151	17,364,111	12,981,111	4,958,040	28·55	4,383,000	33·76	3,884,395	42·70
Ohio.....	3,666,719	3,198,062	2,665,260	468,657	14·65	532,802	19·99	325,749	13·92
Indiana	2,189,030	1,978,301	1,680,637	210,729	10·65	297,664	17·71	330,209	24·45
Illinois.....	3,818,536	3,077,871	2,539,891	740,665	24·06	537,980	21·18	327,940	48·36
Michigan	2,089,792	1,636,937	1,184,059	452,855	27·66	452,878	38·25	434,946	58·06
Wisconsin.....	1,683,697	1,315,497	1,054,670	368,200	27·99	260,827	24·73	278,789	35·93
Minnesota.....	1,300,017	780,773	439,706	519,244	66·50	341,067	77·57	267,683	155·61
Iowa.....	1,906,729	1,624,615	1,194,020	282,114	17·36	430,595	36·06	519,107	76·91
Missouri.....	2,677,080	2,168,380	1,721,295	508,700	23·46	447,085	25·97	539,283	45·62
North Dakota	182,425	36,909	—	145,516	394·26	—	—	—	—
South "	327,848	98,268	—	229,580	233·63	—	—	—	—
Nebraska	1,056,793	452,402	122,993	604,391	133·60	329,409	267·83	94,152	326·45
Kansas	1,423,485	996,096	364,399	427,389	42·91	631,697	173·35	257,193	239·91
Southern Central division	10,948,253	8,919,371	6,434,410	2,028,882	22·75	2,484,961	38·62	665,752	11·54
Kentucky	1,855,436	1,648,690	1,321,011	206,746	12·54	327,679	24·81	165,327	14·31
Tennessee	1,763,723	1,542,359	1,258,520	221,364	14·35	283,839	22·55	148,719	13·40
Alabama	1,508,073	1,262,505	996,992	245,568	19·45	265,513	26·63	32,791	3·40
Mississippi.....	1,284,887	1,131,597	827,922	153,290	13·55	303,675	36·68	36,617	4·63
Louisiana	1,116,828	939,946	726,915	176,882	18·82	213,031	29·31	18,913	2·67
Texas	2,232,220	1,591,749	818,579	640,471	40·24	773,170	94·45	214,364	35·48
Indian Territory†	—	—	—	—	—	—	—	—	—
Oklahoma	61,701‡	—	—	61,701	—	—	—	—	—
Arkansas	1,125,385	802,525	484,471	322,860	40·23	318,054	65·65	49,021	11·26

* Decrease.

† Of Virginia and West Virginia together.

‡ The number of white persons in the Indian Territory is not included in this table, as the census of Indians and other persons on Indian reservations, which was made a subject of special investigation by law, has not yet been completed.

§ Including 5,337 persons in Greer county (in Indian Territory), claimed by Texas.

Population of the United States in 1890, &c.—Contd.

States and Territories.	Population.			Increase from 1880 to 1890.		Increase from 1870 to 1880.		Increase from 1860 to 1870.	
	1890.	1880.	1870.	Number.	Percentage.	Number.	Percentage.	Number.	Percentage.
Western division	3,008,948	1,767,697	990,510	1,241,251	70·22	777,187	78·46	371,534	37·15
Montana.....	131,769	39,159	20,595	92,610	236·50	18,584	90·14	20,595	100·00
Wyoming.....	60,589	20,789	9,118	39,800	191·45	11,671	128·00	9,118	78·57
Colorado.....	410,975	194,327	39,864	216,648	111·49	154,463	387·47	5,587	100·00
New Mexico.....	144,862	119,565	91,874	25,297	21·16	27,691	30·14	1,642*	100·00
Arizona.....	59,691	40,440	9,658	19,251	47·60	30,782	318·72	9,658	100·00
Utah.....	206,498	143,963	86,786	62,535	43·44	57,177	65·88	46,513	111·70
Nevada.....	44,327	62,266	42,491	17,939*	28·81*	19,775	46·54	35,634	510·00
Idaho.....	84,229	32,610	14,999	51,619	158·29	17,611	117·41	14,999	100·00
Alaska†.....	—	—	—	—	—	—	—	—	—
Washington.....	349,516	75,116	23,955	274,400	365·30	51,161	213·57	12,361	100·00
Oregon.....	312,490	174,768	90,923	137,722	78·80	83,845	92·22	38,458	73·00
California.....	1,204,002	864,694	560,247	339,308	39·24	304,447	54·34	180,253	47·00

* Decrease.

† The number of white persons in Alaska is not included in this table, as the census of Alaska, which was made in 1890, is the subject of special investigation by law, has not yet been completed.

Recapitulation by Groups.

Geographical Divisions.	Population.			Increase from 1880 to 1890.		Increase from 1870 to 1880.		Increase from 1860 to 1870.	
	1890.	1880.	1870.	Number.	Percentage.	Number.	Percentage.	Number.	Percentage.
The United States	62,480,540	50,158,783	38,558,371	12,324,757	24·57	11,597,412	30·08	7,115,050	23·60
North Atlantic division ...	17,364,429	14,507,407	12,298,730	2,857,022	19·69	2,208,677	17·96	1,704,462	100·00
South	8,836,759	7,597,197	5,853,610	1,239,562	16·32	1,743,587	29·79	488,907	100·00
Northern Central division ..	22,322,151	17,364,111	12,981,111	4,958,040	28·55	4,383,000	33·76	3,884,395	41·00
Southern	10,948,253	8,919,371	6,434,410	2,028,882	22·75	2,484,961	38·62	665,752	100·00
Western division	3,008,948	1,767,697	990,510	1,241,251	70·22	777,187	78·46	371,534	61·00

"The general law governing the increase of population is, that when not disturbed by extraneous causes, such as wars, pestilences, immigration, emigration, &c., increase of population goes on at a continually diminishing rate. The operation of this law in this country has been interfered with in recent years by the late war, which, besides the destruction of a vast number of lives, decreased the birth-rate very materially during its progress. It was followed by an increased birth-rate, as is invariably the case under similar circumstances. The normal rate of increase has been, and is, greatly interfered with also by immigration, and it is difficult to estimate the effect of this upon our rate of increase. Approximation to it may, however, be reached by the following process: Between 1880 and 1890, 5,246,613 immigrants entered this country. Of these a part have returned to their homes or migrated elsewhere. A considerable proportion, probably about one-eighth, have died. On the other hand, children have been born to them, and it is probable that the births have counterbalanced the deaths and the emigration, so that the net influence which immigration has exerted upon our population is approximately expressed by the

number of immigrants. Subtracting this number from the numerical increase during the past decade, there remains a trifle over 7,000,000 to represent the actual increase of the inhabitants of this country in 1880. The rate of natural increase is therefore not far from 14 per cent.

"Similar calculations for the population in 1880 and the decade preceding would, of course, be valueless on account of the imperfections of the census of 1870.

"The table herewith submitted shows the population by States and territories in 1890, 1880, and 1870, the numerical increase in each State between 1860 and 1870, between 1870 and 1880, and between 1880 and 1890, and the corresponding percentages of increase. This table, which gives the population only at ten-year intervals, is supplemented in the case of a few States by the following table, in which is given, in addition to the results of the federal censuses of 1880 and 1890, the result of State censuses taken, with the exception of Michigan, in 1885, the census of that State having been taken in 1884. Comparing the results of these State censuses with those of the federal censuses, it must be understood that the State censuses were taken under different authority, by different machinery, and by different methods from those employed in the federal census.

States.	Population.			Increase.		Percentage of Increase.	
	1890.	1885.	1880.	1880 to 1885.	1885 to 1890.	1880 to 1885.	1885 to 1890.
Colorado	410,975	243,910	194,327	49,583	167,065	25·5	68·5
Dakota	510,273	415,610	135,177	280,433	94,663	207·5	22·8
Florida	390,435	342,551	269,493	73,058	47,884	27·1	14·0
Iowa	1,906,729	1,753,980	1,624,615	129,365	152,749	8·0	8·7
Kansas	1,423,485	1,268,530	996,096	272,434	154,955	27·4	12·2
Massachusetts	2,233,407	1,942,141	1,783,085	159,056	291,266	8·9	15·0
Michigan	2,089,792	1,853,658	1,636,937	216,721	236,134	13·2	12·7
Minnesota	1,300,017	1,117,798	780,773	337,025	182,219	43·2	16·3
Nebraska	1,056,793	740,645	452,402	288,243	316,148	63·7	42·7
New Jersey ...	1,441,017	1,278,033	1,131,116	146,917	162,984	13·0	12·8
„ Mexico	144,862	134,141	119,565	14,576	10,721	12·2	8·0
Oregon	312,490	194,150	174,768	19,382	118,340	11·1	61·0
Rhode Island	345,343	304,284	276,531	27,753	41,059	10·0	13·5
Washington ...	349,516	129,438	75,116	54,322	220,078	72·3	170·0
Wisconsin	1,683,697	1,563,423	1,315,497	247,926	120,274	18·8	7·7

"In the State of Kansas the course of the population can be traced even more closely than in the other States represented in the above table. Since 1885 this State has taken a census each year,

the results of which are shown in the accompanying table, together with the federal censuses of 1880 and 1890:—

1880.	Federal census.....	996,096
'85.	State census.....	1,268,530
'86.	„.....	1,406,738
'87.	„.....	1,514,578
'88.	„.....	1,518,552
'89.	„.....	1,464,914
'90.	Federal census.....	1,423,485

“In the principal table of this bulletin the States are grouped as North Atlantic, South Atlantic, Northern Central, Southern Central, and Western. This grouping is a natural one, and by the aid of it certain characteristic features in the development of the States are brought out. The North Atlantic section is primarily a manufacturing section. As a necessary result of the predominance of manufacturing there is a great development of urban population. Indeed, more than half of the inhabitants are grouped in cities.

“The predominant industry of the Northern Central States is agriculture, although in many of these States manufactures are now acquiring prominence. The industries of the South Atlantic and Southern Central sections are still almost entirely agricultural, while in the Western States and territories the leading industries are agriculture, mining, and grazing.

“In the course of the settlement and development of a country the industries commonly follow one another in a certain order. After the hunter, trapper, and prospector, who are commonly the pioneers, the herdsman follows, and for a time the raising of cattle is the leading industry. As settlement becomes less sparse, this is followed by agriculture, which in its turn, as the population becomes more dense, is succeeded by manufactures, and, as a consequence, the aggregation of the people in cities. We see in this country all stages of this progress.

“In Maine, New Hampshire, and Vermont the rate of increase between 1870 and 1880 has not quite been maintained; indeed, in the last named State there has been a trifling absolute decrease of population. In these States agriculture is in a very low condition, the soil is as a rule infertile, and markets are not especially easy of access; consequently the farming population has continued to migrate to the far west. On the other hand, manufactures have not yet assumed sufficient prominence to retain population.

“In the other States of this subdivision, with the exception of Rhode Island, viz., Massachusetts, Connecticut, New York, New Jersey, and Pennsylvania, while farming is at quite as low an ebb as in Maine, New Hampshire, and Vermont, manufactures have assumed so great prominence that they have not only sufficed to maintain the former rate of increase, but even to increase it. The rate in Massachusetts has increased from 22 to 25 per cent., in Connecticut from 16 to 20, in New York from 16 to 18, in New Jersey from 25 to 27, and in Pennsylvania from 22 to 23. It will be seen, furthermore, that this augmentation of the rate of increase is greater in the more easterly States than in the three western ones

above mentioned, owing to the fuller development of manufacturing industries.

“Turning to the table showing the results of the State censuses, it appears that during the first half of the last decade the rate of increase in Massachusetts was below the average of the decade, while in the last half it was much greater, a fact which indicates either that the rate of increase declined materially in the first half of the decade, or that the State enumeration was much less complete than that of the federal enumeration in 1890. The case is somewhat similar in Rhode Island, although not in so marked a degree, the rates of increase between 1880 and 1885 and between 1885 and 1890 being respectively 10 and 13·5 per cent. In New Jersey the rate of increase seems to have been maintained quite uniformly throughout the decade.

“In the Northern Central group of States various conditions prevail. In Ohio, Indiana, Iowa, and Missouri, and in Illinois if the city of Chicago be dropped from consideration, the rate of increase has declined very decidedly. In Ohio it has fallen from 20 to 15 per cent.; in Indiana from 18 to 11; in Iowa from 36 to 17; in Missouri from 26 to 23 per cent., in spite of the rapid growth of St. Louis and Kansas City, and in Illinois, dropping Chicago from consideration, from 14·9 to 5·6 per cent. In these States the agricultural industry, which is still the prominent one, has begun to decline, owing to the sharp competition of western farms. The farming population has migrated westward, and the growth of manufactures is not yet sufficiently rapid to repair these losses. The southern portions of Michigan, Wisconsin, and Minnesota are under similar conditions, but the northern parts of these States, lying upon the frontier of settlement, have filled up with sufficient rapidity to repair either wholly or in part the losses of the southern parts. Michigan increased at the rate of 38 per cent. between 1870 and 1880, while between 1880 and 1890 the rate was but 28 per cent. The increase between 1880 and 1890 was cut into unequal parts by the State census taken in 1884. In the first four years of the decade the increase was 13·2 per cent., while in the last six years it was 12·7 per cent. As the rate of increase in this State is declining, the State census taken in 1884 corroborates the federal census of 1890. In Wisconsin the last decade shows an increase of 28 per cent., as against an increase of 25 per cent. in the decade between 1870 and 1880. The State census of Wisconsin, taken in 1885, cuts the decade into two equal parts, and shows an increase during the first half of 18·8 per cent. and during the second half of but 7·7 per cent.

“Minnesota increased 78 per cent. between 1870 and 1880, and 6 per cent. between 1880 and 1890, the numerical increase being over half a million in the past decade. The State census, taken in 1885, shows that the bulk of this increase occurred between 1880 and 1885. The numerical increase during the first five years was 337,025, and the rate of increase 43 per cent., while during the last half of the decade the numerical increase was 182,219, and the rate of increase 16·3 per cent.

“During the past ten years the population of Dakota, consider-

ing the two States of North Dakota and South Dakota together, has increased from 135,177 to 510,273, or 277 per cent.; Nebraska from 452,402 to 1,056,793, or 134 per cent., and Kansas from 996,096 to 1,423,485, or 43 per cent. This increase has not, however, continued uniformly throughout the decade. In 1885 Dakota contained 415,610 inhabitants, or more than four-fifths of its present population. Nebraska contained 740,645 inhabitants in the same year, thus dividing the numerical increase quite equally between the two halves of the decade, but leaving the greater percentage of increase in the first half. In the same year Kansas by its State census had 1,268,530 inhabitants, showing that nearly two-thirds of the numerical gain was acquired during the first half of the decade. The industries of these States are almost purely agricultural, and are dependent on the supply of moisture either in the form of rain or by irrigation. Through these States passes what is known as the sub-humid belt, a strip of country several degrees in width, in which during rainy years there is an abundance of moisture for the needs of crops, while in the years when the rainfall is below the average the supply is deficient. In this region little provision has been made for artificial irrigation, the settlers having thus far been content to depend upon rainfall. Into this region the settlers flocked in large numbers in the early years of the decade, drawn thither by the fertility of the land and by the fact that for a few years the rainfall had been sufficient for the needs of agriculture. During the past two or three years, however, the conditions of rainfall have materially changed. It has fallen decidedly below the normal, and the settlers have thereby been forced to emigrate. Thousands of families have abandoned this region and gone to Oklahoma and the Rocky Mountain region. This migration is well shown in the progress of Kansas, as indicated by its annual censuses. These censuses show a rapid increase in population from 1880 up to 1887; 1888 shows but a slight increase over 1887, while 1889 shows a reduction in the population, leading up to the further reduction shown by the federal census in 1890.

"Throughout the South Atlantic and Southern Central States the rate of increase has diminished, and in most of these States it has diminished very materially. A certain reduction in the percentage of increase, especially in the eastern part of this region, was to be expected, due not only to the operation of general laws, but also to the fact that there has been considerable migration from the States east of the Mississippi river to the westward and but little immigration. Taken together, however, these two causes by no means account for the reduction in the rate of increase in these States. The real cause is to be found, as was stated early in this discussion, in the imperfections of the census of 1870. These imperfections resulted in giving a comparatively low rate of increase between 1860 and 1870, and an exaggerated increase between 1870 and 1880. The following table, showing the rates of increase during the last three decades in these States, illustrates the imperfections of the census of 1870 in a somewhat startling manner:—

States.	Per Cent. of Increase.		
	1860 to 1870.	1870 to 1880.	1880 to 1890.
Virginia	4·4*	23·5	9·0
North Carolina	7·9	30·6	15·5
South „	0·3	41·1	15·2
Georgia	12·0	30·2	18·9
Alabama	3·4	26·6	19·4
Mississippi	4·6	36·7	13·5
Louisiana	2·7	29·3	18·8
Kentucky	14·3	24·8	12·5
Tennessee	13·4	22·5	14·4

* Of Virginia and West Virginia together.

“It is but reasonable to suppose that in these States, which were ravaged by war from 1861 to 1865, the rate of increase in the decade which includes the war period should be less than a normal one. Of all these States Virginia, whose soil was the principal theatre of the war, must have suffered most severely, and during the period in question it increased at the rate of but 4·4 per cent. Next to Virginia, Kentucky and Tennessee suffered the most severely, and yet they increased, respectively, 14 and 13 per cent. On the other hand, North Carolina, which suffered less severely, gained but 8 per cent., and South Carolina, which suffered less in comparison with Virginia, apparently remained at a standstill as regards population. Georgia gained 12 per cent., while Alabama and Louisiana gained but 3 per cent. and Mississippi but 5, although they were comparatively remote from active operations, and suffered relatively little from the ravages of war. On the other hand, those States which suffered the most severely from the war have made during the decade between 1870 and 1880 the smallest proportion of gain of the southern States, whereas the reverse should have been the case. Thus Virginia gained 23 per cent., Kentucky 25, and Tennessee 23, while the States that were farther removed from active operations were North Carolina, which gained 31; South Carolina, 41; Georgia, 30; Alabama, 27; Mississippi, 37; and Louisiana, 29 per cent. These startling discrepancies can be due only to the imperfections of the census of 1870, which were, as has been demonstrated, greatest in South Carolina, Mississippi, Louisiana, Alabama, Georgia, and North Carolina, although they were not by any means wanting in Virginia, Kentucky, and Tennessee.

“The industries of these two sections are almost purely agricultural. During the past ten years manufactures have obtained a slight footing and mining has made considerable growth in the mountain regions, but these causes have thus far produced but a comparatively trifling movement of population. The urban population, although great in proportion to that which existed formerly, is very small in proportion to the rural population of the region.

"During the first half of the last decade Florida had a rapid growth. The population between 1880 and 1885 increased 73,058, or at the rate of 27 per cent. This rapid growth, however, received a serious check in 1887 and 1888 by an epidemic of yellow fever and by severe frosts. The growth since 1885 has, therefore, been comparatively slow.

"Arkansas has continued to grow at a rapid rate, having increased 40 per cent. in the last ten years. Texas also has increased with great rapidity, the numerical increase of its population being 640,471, or over 40 per cent.

"In the western section the conditions of growth have been very varied. In the earlier years of the decade the discovery of valuable silver and copper mines in the mountains of Montana in the neighbourhood of Butte have drawn to that State a large immigration, which is engaged not only in mining, but in developing the rich agricultural resources. Wyoming has continued to grow with accelerated rapidity.

"The census of Colorado in 1880 was taken on the top wave of a mining excitement, which had filled its mountains with miners, prospectors, and speculators, increasing its population enormously, especially in the mountainous country. The census of the State taken in 1885 was, on a superficial view, very surprising. It showed that most of the mining counties had lost population during the five years preceding. This loss was, however, more than made up by the growth of its cities and its agricultural counties. The census of 1890 shows still further reduction of population in the mining regions of the State and an extraordinary development of its urban population and its farming element. New Mexico, Arizona, and Utah show rates of increase which are small when the sparsely settled condition of these territories is considered, while Nevada shows an absolute diminution of population of 17,939, or nearly 29 per cent., leaving it the smallest of all the States. This condition of things is a natural result of the failure of the Comstock and other mines, work upon which has practically ceased. Idaho has increased its population two and a half times. Its prosperity is mainly due to its mines, although people are now turning to agriculture in considerable numbers.

"The growth of Washington has been phenomenal, the population in 1890 being nearly five times that of 1880. As is shown by the State census taken in 1885, this growth has been almost entirely during the last five years of the decade. The inducements which have attracted settlers are in the main its fertile soil and ample rainfall, which enable farming to be carried on without irrigation over almost the entire State. The growth of Oregon, though less rapid, has been at a rate of nearly 80 per cent. during the past decade. The numerical increase has been 137,722, of which over four-fifths has been acquired during the past five years. The additions to its population are mainly in the valleys of the Columbia and Willamette rivers.

"California, which increased 54 per cent. during the decade between 1870 and 1880, has maintained during the past decade a rate of increase of 39 per cent. This increase, though widespread

throughout the State, has been most marked in its great cities and in the southern part.

“The following table shows the relative rank in population of the States and territories in 1890 and in 1880:—

Relative Rank of States and Territories in Population.

1890.	1880.	1890.	1880.
1 New York	1 New York	26 Nebraska	26 Minnesota
2 Pennsylvania	2 Pennsylvania	27 Maryland	27 Maine
3 Illinois	3 Ohio	28 West Virginia	28 Connecticut
4 Ohio	4 Illinois	29 Connecticut	29 West Virginia
5 Missouri	5 Missouri	30 Maine	30 Nebraska
6 Massachusetts	6 Indiana	31 Colorado	31 New Hampshire
7 Texas	7 Massachusetts	32 Florida	32 Vermont
8 Indiana	8 Kentucky	33 New Hampshire	33 Rhode Island
9 Michigan	9 Michigan	34 Washington	34 Florida
10 Iowa	10 Iowa	35 Rhode Island	35 Colorado
11 Kentucky	11 Texas	36 Vermont	36 District of Columbia
12 Georgia	12 Tennessee	37 South Dakota	37 Oregon
13 Tennessee	13 Georgia	38 Oregon	38 Delaware
14 Wisconsin	14 Virginia	39 District of Columbia	39 Utah
15 Virginia	15 North Carolina	40 Utah	40 Dakota
16 North Carolina	16 Wisconsin	41 North Dakota	41 New Mexico
17 Alabama	17 Alabama	42 Delaware	42 Washington
18 New Jersey	18 Mississippi	43 New Mexico	43 Nevada
19 Kansas	19 New Jersey	44 Montana	44 Arizona
20 Minnesota	20 Kansas	45 Idaho	45 Montana
21 Mississippi	21 South Carolina	46 Oklahoma	46 Idaho
22 California	22 Louisiana	47 Wyoming	47 Wyoming
23 South Carolina	23 Maryland	48 Arizona	
24 Arkansas	24 California	49 Nevada	
25 Louisiana	25 Arkansas		

“It will be seen that, as in 1880, New York still heads the list, and is followed by Pennsylvania. Ohio and Illinois have exchanged places. Of the other changes in the list the most marked are those of Texas, which rises from No. 11 to No. 7; Kentucky, which drops from 8 to 11; Minnesota, which rises from 26 to 20; Nebraska, which rises from 30 to 26; Maryland, which drops from 23 to 27; Colorado, which rises from 35 to 31; Vermont, which drops from 32 to 36; Washington, which rises from 42 to 34; Delaware, which drops from 38 to 42; Nevada, which drops from 43 to 49; and Arizona, which drops from 44 to 48. The average change in rank is 2.2 places.

“I have the honor to be, Sir,

“respectfully yours,

“ROBERT P. PORTER,

“Superintendent of Census.

“Hon. JOHN W. NOBLE,

“Secretary of the Interior.”

III.—*Silver and Gold Coinage of England from the Conquest to the Present Time, &c.* By JOHN HENRY NORMAN, ESQ.

THE writer craves permission to make some general observations upon money before commenting upon the novel table of the English coinage, &c., which he is happy to present to the world in the pages of the *Journal of the Royal Statistical Society*.

A Standard of Value and Means of Payment.

It is submitted that the word *money* should be limited to one meaning.

The Standard Substance.—The necessary factor of money, the means by which it does its work, is *value*. The value giving factors in the standard substance, which are in use in a country possessing an effective monetary system, are in ordinary times measured out against the value giving factors in anything for which it may be exchanged. No metal token money, paper instrument of credit, or promise of payment of any kind can be brought under the definition of *money*, because they are not of the requisite value. Promises to pay money, printed or written upon paper, may enter into the composition of a good monetary system, but only so long as the promises are faithfully kept. They have the currency function of money but not the value function, which is the equivalent in exchange, and this is the essence of money or of the standard substance alone. The failure to redeem the promise made by the individual, like the failure of a Government to redeem its note by payment of the standard substance, results in both cases in bankruptcy.

The efforts of the Royal Gold and Silver Commission of 1886-89 to make a credit instrument equal in value to gold, say a bit of paper worth one-eighth of a penny to 5 sovereigns, was one of the most miserable spectacles of the age. But no wonder when the last edition of the *Encyclopædia Britannica*, adopting Professor F. A. Walker's definition of money, classes everything as money which facilitates the exchanges of articles and properties, thus embracing all tokens of money under the term money.

When and where these tokens cannot be converted into the standard substance without question, delay, or expense, there is no scientific and effective monetary system. As inconvertible media in the internal interchanges within a country they may form a currency system of an autocratic register character of no certain exchange value, having no cost value in the country issuing such instruments, and of no value whatever among the trading nations of the world.

To form a standard of value, combined with a means of payment, three conditions must be observed: 1st, the substance selected by the State for its standard must be received by the State from any place or person in unlimited quantities through mints, or in payment of customs or other Government dues; 2nd, it must be fitted for monetary purposes either as reserves against the issue of credit instruments or in the shape of coin; 3rd, the standard substance must be made unlimited legal tender.

In John Locke's time money was defined as gold, silver, and copper coins. At present there is no agreement as to what it is. My definition limits money to the standard substances, gold and silver, gold in one country, silver in another, as used among the civilised and partially civilised nations of the earth, either in the shape of bullion, or coin reserves against the issue of credit instruments, or in the form of coins.

If the standard substance or money does its work by means of the value giving factors it contains, it would appear to follow as a logical consequence that every endeavour to unite two substances by a legal fixture of relation of one to the other is not only unnatural and unjust, but that it must meet with disastrous failure; for it is inconceivable that any two different substances can be either produced or exchanged for any length of time on parallel lines of value giving factors.

The laws which govern prices and rates of exchange, so far as they are determined by the use of standard substances, have ever been and must continue to be the same. But there are prices and rates of exchange which are not governed by standard substances. The first would exist under an effective and scientific monetary system; the second would exist under a currency system of an autocratic register character. There are therefore two descriptions of prices and two descriptions of rates of exchange.

Prices.

When Abraham bought his burial cave he weighed out the silver in payment for it. Under an effective monetary system price is a definite weight of standard substance. Effigies upon gold and silver coins are certificates that the coins contain a definite weight of fine metal. The counting out of such of these as contain the appointed standard substance in payment for anything is the same thing as weighing them out. Prodigious and vastly varying amounts of credit instruments might be used at different times in a country possessing an effective metal standard or any other effective standard substance, either in the shape of pieces of paper or bits of other substances as tokens or representatives of the standard substance, without diminishing the exchange value of the standard substance. But to secure that the token of the standard substance shall do the work of the standard substance, the possessor of the token must have the power to convert the token into the standard substance without question, delay, or expense. The value of the substance, be it gold or silver, copper or tin, wheat or tea, Manchester piece goods or African cowries, is determined by cost of production acting through the laws of supply and demand. We have therefore one kind of price.

A Definite Weight of Standard Substance.

In the British Isles, say 15s. 6d. for anything, the weight of gold is 87·57 grains of gold. In France, 11 frs. 20c. is 50·79 grains of gold, or 787·24 grains of silver. In the United States of North America, \$3 26 c. is 75·71 grains of gold, or 1211·36 grains of silver. In France and the United States of America, also in some other European countries besides France, both gold and

silver at their fixed relation by the legislature, viz., in the United States of America 16 parts of silver to 1 of gold, and in the nations of the Latin Union, embracing France, Belgium, Italy, Switzerland, and Greece, $15\frac{1}{2}$ parts of silver to 1 of gold, are unlimited legal tender. The payee in these countries is obliged to receive either metal at the payer's option. It will be noticed that the difference in the relation between gold and silver in the Latin Union as compared with that existing in the United States of America is 3.22 per cent. By the amount of this percentage, space is afforded for the play of the metals between the countries possessing the mutilated bimetallism which at present exists in the world. In India 14 rupees 8 annas is 159.5 grains of silver. All these four countries, viz., the British Isles, France, the United States of America, and India, have effective monetary systems at the present time. Twenty years ago France and the United States of America had only currency systems which consisted of inconvertible paper. The standard or measure of value in the British Isles, France, and the United States of America is gold, because the international trade of these countries is priced, and paid, in gold. Gold or a bill of exchange payable in gold can be obtained in payment for shipments between these countries. The moment either of these countries fail to provide gold or bills payable in gold for the shipments made to it, that country loses its monetary system; its gold standard or measure of value is gone. Whether the country in such a position falls back upon inconvertible paper or upon silver, the real value of which is in the proportion say of 80 parts of silver to 1 of gold, is immaterial. The standard of India is silver, and the international trade of that country is priced by silver and payable in silver. These standard metal prices result from these four countries possessing effective monetary systems. The term *monetary system* can only be properly applied to countries wherein paper tokens of the standard substance can be exchanged for the standard substance which these tokens represent at the will of the holder of them, without question, delay, or expense. It is the value giving factors embodied in the standard substance which alone render the substance an *equivalent* for the value giving factors in those things for which it can be exchanged.

But there may be currency systems without any standard substances, and there are currency systems which have very widely fluctuating relations to a standard substance or measure of value, such as the Argentine Republic, where the premium on gold just now is 200 per cent. In countries where the currency does not contain any standard substance, or in countries where credit instruments have only a remote relation to a standard substance of value, prices are not definite weights of metal. Such prices are dependent upon the *quantity* of inconvertible paper. The currencies are of an autocratic register character. If the quantity of such a currency were increased in sufficient volume, the circulating value, that for which it would exchange, would become the cost of the production and stamping the paper.

Rates of Exchange.

Rates of exchange are either signs for definite weights of

standard substances, or they are signs for pieces of paper with which standard substances can or cannot be purchased. The standard substance to be obtained may be of vastly less weight than the weight of the substance indicated by the terms of the piece of paper for which the standard substance ought to be exchanged. All international interchanges between countries possessing scientific and effective monetary systems, are as good as weighed or measured out against the weight of one or two standard substances by the sending country and by the receiving country. Against gold, if the standard of the two countries making the interchanges is gold; or against silver if they both possess silver. Against gold when one country has a gold standard, and against silver when the other country has a silver standard. In these instances rates of exchange are signs for definite weights of standard substances, *i.e.*, gold and silver. The price of the smallest substance of value interchanged is affected by any alteration in the rates of exchange. The rates of exchange between gold standard countries and silver standard countries are immediately adjusted to the gold price of silver and the silver price of gold. These prices may fluctuate daily.

When two countries make interchanges of goods and properties, both of which possess only inconvertible paper, the goods, &c., of each are measured out against inconvertible paper. Between the value of these two currencies there may be the widest difference as each is measured by a metal standard, assuming that in each country the paper can purchase either of the standard substances. The currency of a country has no relation to either of the standard substances, gold and silver, if neither metal can be purchased by the inconvertible paper currency. The rates of exchange between such countries are signs for the quantities of pieces of paper in one country for the quantity of pieces of paper in the other country representing the moneys of account of each. More properly *currenties of account*; for such countries have no monetary systems.

TABLE of the QUALITY, QUANTITY, and VALUE, MEASURED by WHEAT and an AGRICULTURAL LABOURER'S DAILY WAGE, of the SILVER and GOLD COINAGE of ENGLAND from the CONQUEST to the PRESENT TIME, &c., &c.

Col. 1. Year. Col. 2. Reign of sovereign and year. Col. 3. Weight of fine silver in the standard pound troy. Col. 4. Grains of fine silver in the standard pound. Col. 5. Grains of fine silver in the standard pound, inclusive of coinage charges. Col. 6. Percentage coinage charges. Col. 7. Shillings coined from weights in Col. 4. Col. 8. Grains of fine silver in the shilling on issue from the Mint. Col. 9. Ditto according to Locke. Col. 10. Sign in pence or decimal parts of one penny for one grain of fine silver. Col. 11. Sign for one ounce or 444 grains of fine silver. Col. 12. Weight of carats of fine gold per 24 carats. Col. 13. Grains of fine gold in the standard pound. Col. 14. Grains of fine gold in the pound, with coinage charges. Col. 15. Percentage coinage charges. Col. 16. Sovereigns coined from weight in Col. 13. Col. 17. Grains of fine gold in the sovereign on issue from the Mint. Col. 18. Sign in pence or decimal parts of one penny for one grain of fine gold. Col. 19. Sign for one ounce of standard gold, 440 grains of fine

gold. Col. 20. Proportion of fine silver to one of fine gold. Col. 21. Proportion of fine silver to one of fine gold, inclusive of coinage charges. Col. 22. Thomas Snelling's proportion of silver to one of gold. Col. 23. Year. Col. 24. Grains of silver measured by a quarter of wheat. Macpherson's prices. Col. 25. Grains of fine

Table of the Quality, Quantity, and Value of the Silver and Gold

1 Year, A.D.	2 Sovereign's Reign and Year of Reign.	3 4 5 SILVER. Weight of Fine Metal			6 Per- centage Coin- age Charge.	7 Shillings Coined from Weight in Col. 4.	8 9 Grains of Fine Silver in Shillings		10 Sign in Pence of One Grain.	11 Sign per Ounc of Silver 444 Grain Fine.
		Per Pound.	In Troy Grains.	With Coinage Charge.			On Issue from the Mint.	Given by Locke.		
1066....	Conquest	11oz. 2dwt.	5,328	—	—	s. d. 20 —	266'4	—	'045	20
1280....	8 Edw. I....	"	"	—	—	20 "	"	—	"	—
1300....	28 ".....	"	"	5,645'0	6'0	20 3	263'1	264	'0456	20
'44....	18 Edw. III	"	"	"	—	"	"	"	—	—
'49....	23 ".....	"	"	"	—	22 6	236'8	236	'0507	22
'56....	30 ".....	"	"	5,505'6	3'3	25 —	213'1	213	'0563	25
'94....	18 Rich. II..	"	"	"	—	"	"	—	—	—
1401....	3 Hen. IV..	"	"	"	—	"	"	—	—	—
'21....	9 Hen. V....	"	"	5,502'2	3'3	30 —	177'6	176	'0676	30
'25....	4 Hen. VI..	"	"	"	—	"	"	—	—	—
'64....	4 Edw. IV..	"	"	5,967'3	12'0	37 6	142'1	142	'0844	—
'65....	5 ".....	"	"	"	—	"	"	—	—	—
'70....	49 Hen. VI..	"	"	5,612'1	5'3	"	"	142	—	—
'82....	22 Edw. IV..	"	"	5,541'1	4'0	"	"	—	—	—
'83....	1 Rich. III	"	"	"	—	"	"	—	—	—
'85....	1 Hen. VII	"	"	"	—	"	"	—	—	—
1509....	1 Hen. VIII	"	"	5,470'1	2'7	"	"	118	'1010	—
'27....	18 ".....	"	"	5,469'5	"	40 —	133'2	—	'0900	40
'27....	18 ".....	"	"	5,470'1	"	45 —	118'4	118	'1010	44
'27....	18 ".....	"	"	"	—	"	"	—	—	—
'43....	34 ".....	10 oz.	4,800	5,600'0	16'6	48 —	100'0	100	'120	53
'45....	36 ".....	6 "	2,880	5,280'0	83'3	"	60'0	60	'200	88
'46....	37 ".....	4 "	1,920	"	175'0	"	40'0	40	'300	133
'47....	1 Edw. VI..	4 "	"	"	—	"	"	—	—	72
'49....	3 ".....	6 "	2,880	6,080'0	111'1	72 —	"	—	—	—
'51....	5 ".....	3 "	1,440	—	—	"	20'0	20	'600	266
'51....	5 ".....	11 "	5,280	—	—	60 —	88'0	—	'135	60
'51....	5 ".....	11 "	"	—	—	"	"	—	—	—
'52....	6 ".....	11oz. 1dwt.	5,304	5,392'4	1'7	"	88'4	88	'135	60
'52....	6 ".....	"	"	"	—	"	"	—	—	—
'53....	1 Mary.....	11 oz.	5,280	5,368'0	1'7	"	88'0	—	—	—
'60....	2 Elizabeth	11oz. 2dwt.	5,328	5,461'2	2'5	"	88'8	89	'135	60
'60....	2 ".....	"	"	—	—	"	"	—	—	—
1600....	43 ".....	"	"	5,499'8	3'2	62 —	85'9	86	'140	62
1600....	43 ".....	"	"	—	—	"	"	—	—	—
'04....	2 James I....	"	"	5,542'7	4'0	"	"	—	—	—
'26....	2 Chas. I....	"	"	5,499'8	3'2	"	"	—	—	—
'66....	18 Chas. II..	"	"	5,328'0	—	"	"	—	—	—
'94....	".....	"	"	"	—	"	"	—	—	—
1717....	3 Geo. I....	"	"	—	—	"	"	—	—	—
1816....	56 Geo. III..	"	"	5,648'8	6'0	66 —	80'7	—	'149	66

gold. Col. 26. Year. Col. 27. Average daily pay of an agricultural labourer in pence. Col. 28. Year. Col. 29. The same pay in grains of silver. Col. 30. The same in grains of gold. Col. 31. Sovereign's reign. Col. 32. Coinage of silver. Col. 33. Coinage of gold.

Coinage of England from the Conquest to the Present Time, &c.

12 13 14 GOLD. Weight of Fine Metal			15 Per- centage Coin- age Charge.	16 Pounds of Coin from Weight in Col. 13.	17 Grains of Fine Gold in Pound on Issue from the Mint.	18 Sign in Pence for One Grain.	19 Sign for Ounce of Gold 440 Grains Fine.	20 21 Proportion of Fine Silver to One of Fine Gold		22 Thomas Snelling's Pro- portions of Gold to Silver.
Per pound.	In Troy Grains.	With Coinage Charge.		£ s. d.			s. d.	On Issue from the Mint.	With Coinage Charges.	
—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—
3'3½	5,523½	5,697	3'1	13 3 4	419'5	0'572	21 10	12'54	12'95	12 18444 25403
"	"	5,753'6	4'2	14 — —	394'5	0'609	23 4	12'08	12'20	11 1175 25403
"	"	5,646'2	2'2	15 — —	368'2	0'652	25 —	11'57	11'70	11 1844 25403
"	"	5,615'6	1'6	" — —	" — —	" — —	" — —	" — —	11'76	11 151 955
"	"	5,606'4	1'5	16 13 4	331'7	0'724	27 9	10'51	10'91	16 144 191
"	"	5,610'1	1'5	" — —	" — —	" — —	" — —	" — —	—	—
"	"	6,186	12'0	20 16 8	265'1	0'902	34 8	10'72	10'71	10 190 573
"	"	5,778'8	4'6	22 10 —	245'5	0'977	37 6	11'58	12'37	—
"	"	5,683'4	2'8	" — —	" — —	" — —	" — —	" — —	11'81	11 151 955
"	"	5,615'5	1'6	" — —	" — —	" — —	" — —	" — —	11'84	" —
"	"	" — —	" — —	" — —	" — —	" — —	" — —	" — —	" — —	—
"	"	" — —	" — —	" — —	" — —	" — —	" — —	" — —	" — —	—
"	"	" — —	" — —	" — —	" — —	" — —	" — —	" — —	" — —	—
"	"	" — —	" — —	" — —	" — —	" — —	" — —	" — —	" — —	—
"	"	5,554'2	0'6	" — —	" — —	" — —	" — —	" — —	11'82	11 151 955
"	"	5,553'5	0'5	24 — —	230'1	1'043	40 —	" — —	" — —	—
"	"	5,551'5	0'5	27 — —	204'5	1'173	45 —	" — —	" — —	11 151 955
22'0	5,280	5,312'5	0'6	25 2 6	210'1	1'142	41 10	11'28	11'50	—
23'0	5,520	5,753	4'2	28 16 —	192'7	1'245	47 7	10'38	11'69	10 10 23
22'0	5,280	5,720	8'3	30 — —	176'0	1'364	49 10	6'82	11'54	6 9 11
20'0	4,800	5,600	16'6	" — —	160'0	1'500	50 —	5'0	11'75	5 —
"	"	5,040	0'5	" — —	" — —	" — —	" — —	" — —	14'28	—
22'0	5,280	5,435'3	2'8	34 — —	155'3	1'545	56 8	5'17	10'55	5 3 103
"	"	" — —	" — —	" — —	" — —	" — —	" — —	" — —	" — —	4 4 61
"	"	" — —	" — —	" — —	" — —	" — —	" — —	" — —	" — —	2 9 11
23'3½	5,523½	5,546'5	—	36 — —	153'4	1'564	60 —	11'47	—	11 11 20
22'0	5,280	5,304	—	33 — —	160'0	1'500	55 —	11'0	—	—
23'3½	5,523½	5,546'5	0'4	36 — —	153'4	1'564	60 —	11'52	11'67	—
22'0	5,280	5,304	0'4	33 — —	160'0	1'500	55 —	11'05	—	—
23'3½	5,523½	5,546'7	0'4	36 — —	153'4	1'564	60 —	11'47	11'62	11 11 191
"	"	5,561'9	0'7	— — —	— — —	— — —	— — —	11'58	11'82	11 151 955
22'0	5,280	5,312	0'6	33 — —	160'0	1'500	55 —	11'0	—	—
23'3½	5,523½	5,599'1	1'4	36 10 —	151'1	1'588	60 —	11'37	11'56	—
22'0	5,280	5,359	1'5	33 10 —	157'6	1'523	55 6	10'90	11'10	10 5614 5951
"	"	5,351	1'3	37 4 —	141'9	1'691	61 11	12'12	12'43	12 184 705
"	"	5,418	2'6	41 — —	128'8	1'864	68 5	13'33	13'41	13 118 341
22'0	"	5,280	—	44 10 —	118'6	2'024	74 2	14'48	14'48	—
—	"	" — —	—	— — —	— — —	— — —	— — —	— — —	— — —	15 10597 2759
22'0	"	" — —	—	46 14 6	113'0	2'124	77 10½	15'20	15'20	15 151 3640
"	"	" — —	—	" — —	" — —	" — —	" — —	14'28	15'15	—

Silver and Gold Coinage of England from the Conquest to the Present Time—Contd.

23	24	25	26	27	28	29	30	31	32	33
Year.	Fine Silver and Gold in Grains Measured by a Quarter of Wheat, Macpherson's Prices.		Year.	Average Daily Pay of Agricultural Labourer.	Year.	Fine Silver and Gold in Grains, Measured by foregoing Daily Pay.		Sovereign's Reign.	Coinage.	
	Silver.	Gold.				Silver.	Gold.		Silver.	Gold.
1196....	4,977	—	1200	} 4	1066	89	—	Hen. III ..	£ 3,898	£ —
—	—	—	'99		—	—	—	Edw. I	38,603	—
1338....	877	—	—	} 5½	—	—	—	Edw. II	46,756	—
—	—	—	1300		1300	113	—	Edw. III..	85,701	11,340
1351....	4,338	361	'99	} 6¼	'44	—	9·2	—	—	—
'61....	1,065	92	—		—	'49	104	8·6	—	—
'63....	3,197	276	—	—	'56	93	8·0	—	—	—
'70....	13,668	1,181	—	—	—	—	—	Rich. II...	2,228	3,980
—	—	—	—	—	—	—	—	Hen. IV....	314	390
—	—	—	—	—	—	—	—	Hen. V	6,924	19,740
1423....	1,421	132	1400	} 6½	1400	111	9·6	—	—	—
'25....	710	66	'99		'21	93	8·6	—	—	—
'64....	948	110	—	—	'64	74	6·9	—	—	—
'69....	853	73	—	—	'65	—	6·4	Hen. VI....	404,677	38,310
—	—	—	—	—	—	—	—	Edw. IV...	89,704	230,760
1486....	3,410	294	—	—	—	—	—	Hen. VII	138,280	189,230
1512....	792	81	1500	} 6½	1500	77	6·7	—	—	—
'14....	653	67	'99		'09	64	—	—	—	—
'21....	4,257	440	—	—	'27	72	6·2	—	—	—
'27....	1,998	172	—	—	'27	64	5·5	Hen. VIII	355,403	292,910
'32....	1,049	92	—	—	'27	—	5·7	—	—	—
—	—	—	—	—	'43	54	5·2	—	—	—
—	—	—	—	—	'45	32	4·8	—	—	—
—	—	—	—	—	'46	22	4·3	—	—	—
—	—	—	—	—	'49	—	4·2	—	—	—
1550....	610	40	—	—	'51	11	4·1	—	—	—
'55....	800	61	—	—	'51	48	4·3	—	—	—
'57....	4,740	426	—	—	'51	—	—	—	—	—
—	—	—	—	—	'52	—	4·2	—	—	—
—	—	—	—	—	'52	—	4·3	—	—	—
—	—	—	—	—	'53	—	4·2	Elizabeth .	6,359,583	795,130
1560....	710	61	1600	} 10¼	1600	73	6·4	—	—	—
'87....	5,683	493	'99		1600	—	6·7	James I	1,641,005	3,666,390
'95 {	1,246	108	1700	} 15	'04	—	6·1	—	—	—
'95 {	5,696	410	'99		'26	—	5·5	Chas. I	8,776,544	3,319,670
1600....	3,348	286	'01	} 12	'66	—	5·1	Cromwell	1,000,000	154,510
—	—	—	'66		'99	107	7·1	Chas. II....	3,722,180	4,177,250
—	—	—	'67	} 15	'01	86	5·7	James II ..	518,316	2,113,630
1604....	2,628	217	'89		'66	—	—	Wm. and Mary ..	7,093,074	3,418,880
'26....	4,228	318	'90	} 20	'67	107	7·1	Anne	207,095	2,484,530
'60....	4,844	364	1803		'89	—	—	Geo. I	233,045	8,492,870
'66....	3,096	213	'04	} 24	'90	143	9·4	Geo. II	304,360	11,662,210
—	—	—	'10		'90	—	—	Geo. III...	6,827,818	75,447,480
1694....	5,828	404	'11	} 25½	'04	171	11·2	Geo. IV	2,216,163	36,147,700
—	—	—	—		'10	182	12·0	Wm. IV...}	1,111,298	11,435,330
1717....	3,913	258	—	—	'11	—	—	Vict., 1837-80 }	22,993,567	297,984,000
1816....	6,322	413	—	—	—	—	—			

* Inclusive of Australian gold coinage.

The object with which this table has been compiled is to induce other countries to furnish similar tables of their coinage, &c. Those for Italy, the Netherlands, Spain, France, and Germany, would prove of great interest. The writer considers that, with a number of such tables before him, some interesting deductions might be made as to the countries towards which silver and gold gravitated at different periods of the past. It is likely that even with these, no certain conclusions could be drawn; as so much would depend upon whether all standard metal currencies at the same period were on an equality with regard to their conformity to, or departure from, the Mint issue weight of the coins. Also as to the concurrent convertibility of the promises to pay into the standard substance.

Since, in the opinion of the writer, coinage charges, like protective duties, increase the cost value of the standard substance to the user of it as currency; he has in Cols. 5 and 14 made additions to the weights of fine silver and gold by the amount of the coinage charge. In comparing Cols. 4 and 5, the weight of silver per pound in Col. 4, varied from 1,440 grains in 1551 to 5,328 in 1066, 1560, and 1816, or a rise of 270 per cent., with nine changes. In Col. 5 the weight of silver per pound varied from 5,368 grains in 1553 to 5,645 in 1300, a rise of only 5·1 per cent., with nineteen changes. In comparing Cols. 13 and 14, the weight of gold per pound in Col. 13 varied from 4,800 grains in 1546 to 5,523½ from 1344 to 1527, a rise of 15 per cent., with thirteen changes in that Col. In Col. 14 the weight of gold per pound varied from 5,040 grains in 1547 to 5,778·8 in 1465, or a rise of 14·6 per cent., with thirty changes in that Col.

In giving the equivalent weight of silver and gold for a quarter of wheat and the daily pay of an agricultural labourer, the gold and silver coins have been taken at their respective weights upon the issue of them from the Mint. It would have been more accurate to have increased these weights of silver and gold by the percentage coinage charges.

It will be noticed that the standard pound of silver has been 5,328 grains for 824 years, with the exception of the changes which have been made in the nine years during the reigns of Henry VIII and Edward VI. The standard pound of gold was 5,523½ grains during 183 years ended in 1527. In that year it was decreased by Henry VIII to 5,280 grains, and altered by him to 5,520 grains in 1543, and back to 5,280 in 1545, then to 4,800 grains in 1546. Edward VI restored it to 5,280 grains in 1549, and changed it to 5,523½ in 1551; in the same year he reduced it to 5,280, and in 1552 made it 5,523½ and then to 5,280. Mary changed it to 5,523½ in 1553. Elizabeth changed it to 5,280 grains in 1560 and to 5,523½ in 1600, and in the same year reduced it to 5,280 grains, at which it has continued since. For 290 years the pound of standard gold has contained 5,280 grains. The period of rapid changes extended over 73 years, which ended in 1600. A period of 183 years, ended in 1527, when it was 5,523½ grains, and of 290 years when it was 5,280 grains, at which it continues. The silver coinage of England has continued for 824 years, and the gold coinage for 546 years.

Governments tampering with the Standard Substance.

There are five methods whereby Governments can defraud and injure the people of a country in connection with their standard substance and means of payment: I. By diminishing the weight of fine metal in the coin without altering the denomination of the coin. This is called by John Locke "raising of the coin." II. By the imposition of exorbitant coinage charges. III. By the fixture of a relation between gold and silver with the vain hope of securing one scientific and permanent standard by the union of the two metals by means of legislative enactments. IV. By failing to keep up the coins into which the standard substance is made in near relation to the mint issue weight of them at the expense of the whole people, due allowance being made for reasonable wear and tear in relation to the proper periods of re-coinage. V. By neglecting to secure a sufficient weight of standard substance wherewith to meet the note circulation, which is unlimited legal tender by law, in times of the distrust of the note. Land or any other security than the standard substance in such times is no better than a rotten reed to depend upon, in the death struggle for the standard substance. This table gives great emphasis to two of these. In Cols. 8 and 17, wherein it will be perceived that in 1066 the shilling contained 266·4 grains of fine silver, and that the quantity in the coin of the same denomination dwindled down by seventeen stages to 80·7 grains in 750 years. In 1344 the sovereign contained 419·5 grains of fine gold; this weight was diminished by nineteen stages to 113·0016 grains of fine gold in 373 years.

The coinage charges are represented in Cols. 6 and 15. These percentage charges on silver began in 1300 at 6 per cent., at which it was in 1816. There were fifteen changes in the interval, ranging from 1·7 per cent. to 175 per cent. on the value of the coin. It was once 12 per cent. in Edward VI's time, and 16·6, 83·3, 111·1, and 175 per cent. in Henry VIII's and Edward VI's time. The percentage coinage charges on gold began at 3·1 per cent., and ceased in 1666. During the 322 years the charge ranged from 0·4 to 16·6, and during the period there were twenty-four changes.

The Proportion of Silver to One of Gold in the Coinage.

Col. 20 shows that during 472 years, ended in 1816, there were twenty-four changes at the English Mint in the relation of silver to gold. The proportions ranged from 5 parts of silver to 1 part of gold in 1546, to 15·20 parts of silver to 1 of gold in 1717. It is only since 1626 that there is a marked increase in the proportionate weight of silver to gold in the current coins of the country. Col. 21 shows the proportion of silver to 1 of gold, with the addition of the coinage charges on the respective metals. It will be noticed that during the years 1527 to 1552, when the fraudulent and ignorant tampering with the measure of value was most conspicuous, the circulating value of gold and silver presented no

great dissimilarity to the proportions in the currency in the preceding or subsequent years. An exception must be made for the two years 1547-48, when it was 14·28, compared with 11·75 in 1546 and 10·55 in 1549. The marked rise in the proportions of silver to gold commenced in 1604 to 12·43, then to 13·41 in 1626, to 14·48 in 1666, to 15·20 in 1717; in 1816 it became 15·15, at which it has continued since.

Weight of Silver and Gold for a Quarter of Wheat.

Wheat has not presented a good measure of value and an equivalent in exchange for other things in past history, nor is it so now. The vicissitude of climate is against its ever having been or from its becoming such. In the past this country's isolation or protective duties have been against it. At present, though there is no restraint upon the importation of it from the whole world, climatic influences have a great effect upon prices, as also have unscientific currency systems. Not much therefore can be learnt from Cols. 24 and 30, except the weights of silver and gold given for a quarter of wheat, *provided that all the time there was no inconvertible paper and the coins were at mint issue weight.* The table represents the weight of silver for wheat for 721 years, and the weight of gold for wheat for 466 years. These weights of silver range from 610 grains in 1550 to 13,668 grains in 1370. Between 1196 and 1560 there are nine quotations of three figures, ranging from 610 grains in 1550 to 948 grains in 1464. There are ten quotations of four figures, ranging from 1,049 in 1532 to 4,977 in 1196, and one quotation of 13,668 during the same period. Between 1587 and 1816 all the eleven quotations embrace four figures, ranging from 1,246 grains in 1595 to 6,322 grains in 1816.

The weights of gold range from 40 grains in 1550 to 1,181 in 1370. Between 1196 and 1560 there are nine quotations of two figures, ranging from 40 grains in 1550 to 92 in 1361 and 1532. There are nine quotations of three figures, ranging from 110 grains in 1464 to 440 grains in 1521, and one quotation in 1370 of 1,181 grains. Between 1587 and 1816 all the eleven quotations embrace three figures, ranging from 213 grains in 1666 to 493 grains in 1587. Excluding the heavy weight of the year 1370, the percentage difference between the lowest and the highest weights of silver is 936 per cent., and of gold 1,132 per cent.

Weights of Silver and Gold for an Agriculturist's Daily Labour.

Not much can be gained from the tables in Cols. 26 to 30. The rates are given on the averages of centuries to 1700. Had these weights synchronised with the rates for wheat, some conclusion might have been drawn from them as to whether the wheat or the pay might be considered the better of the two as an equivalent in exchange for other things. As the vicissitude of climate impairs wheat as a substance for a measure of value, so

the different conditions of the agriculturist labourer during the centuries as regards housing and perquisites, impairs such labour as a measure of value or equivalent in exchange for other things. However, the fluctuations in weight for the same quotation under altered mint regulations may prove of interest and of some value. In the 746 years between 1066 to 1811 in Col. 28, the weights of silver range from 11 grains in 1550 to 182 grains in 1811. Between 1066 and 1600 there are fourteen quotations of two figures, ranging from 11 in 1550 to 93 in 1425, and three quotations of three figures, ranging from 104 in 1349 to 113 in 1300. Between 1600 and 1811 there are two quotations of two figures, ranging from 73 grains in 1600 to 86 grains in 1701 to 1766. There are five quotations of three figures, ranging from 107 in 1700 to 1799 and 1767 to 1789, to 182 grains in 1811.

The weights of gold range from 4.1 grains in 1550 to 12 grains in 1811, in the 467 years, Col. 29. Between 1344 and 1600 there are seventeen different quotations, ranging from 4.1 in 1550 to 9.2 in 1344; and between 1600 and 1811 there are nine quotations, ranging from 5.1 grains in 1666 to 12 grains in 1811.

In the most fraudulent or ignorant period in the matter of coinage, viz., during the years 1502 to 1560, it will be noticed by reference to Cols. 5 and 14 that if the circulating value of the metals is taken, that is the value inclusive of the coinage charges, the extreme difference in Col. 5 shown on silver is 15 per cent., viz., between 5,280 in 1545 and 6,080 in 1549. In Col. 14, showing the gold, the difference is 14 per cent., viz., 5,040 in 1547 and 5,753 in 1543.

Excluding the wheat quotation for 1370 and the quotations for wheat and labour during the seventeen years 1543 to 1559, the greatest variation in the silver quotation for wheat was 868 per cent., 6,322 grains in 1816, and 653 grains in 1514; whilst the greatest variation for labour was 184 per cent., 182 grains in 1811, and 64 grains in 1514 and 1527. The greatest variation in the gold quotation for wheat was 707 per cent., 493 grains in 1587, and 61 grains in 1560; whilst the greatest variation for labour was 98 per cent., 12 grains in 1811, and 6.1 grains in 1604.

Coinage of Silver and Gold.

Between the years 1066 and 1546, 481 years, 1,172,488*l.* of silver and 786,695*l.* of gold were struck. Between 1559 and 1759, 200 years, 36,683,020*l.* of silver and 115,732,711*l.* of gold were struck. Between 1760 and 1836, 77 years, 3,327,461*l.* of silver and 47,583,035*l.* of gold were struck. Between 1837 and 1880, 44 years, 22,993,567*l.* of silver and 297,984,000*l.* of gold, inclusive of that coined in Melbourne, were struck. The total coinage of silver from the Conquest to 1880 was, silver 64,176,536*l.* and gold 462,086,441*l.*, or of fine silver 226,620,000 ozs. at 15 parts of silver to 1 part of gold; and of fine gold 108,800,000 ozs. The weight of gold coined in the first 44 years of the reign of Her Most Gracious Majesty Queen Victoria, is 70,150,000 ozs., leaving 38,650,000 ozs. as the coinage of the 493 preceding years, of the

coinage represented in Col. 33 which is for England only for a large portion of the time.

I desire to conclude this paper by giving my views of the scientific definition of money, and the terms and conditions of an effective monetary system.

Definition of Money.

The term money should be confined to *the standard substance*, either in the form of bullion, as reserves to meet promises to pay the standard substance, or in the shape of coin of full weight standard substance.

Money, or the standard substance, must combine two functions. 1. A measure of value; an equivalent for the thing for which it is exchanged. 2. A means of payment. No promise to pay this substance, or metal, or other token of it, can possibly come under the scientific definition of money. A standard of value must contain value-giving factors in near relation to the value-giving factors in that for which it exchanges: therefore no sign of the thing signified can be raised to an equality with the thing itself.

Conditions and Effects of a Monetary System.

I. The substance forming a standard must have a legal constitution in three particulars to give it automatic action. 1. The substance must be received by the State adopting it as a standard, from any place or person in unlimited quantities, through the instrumentality of a mint, and in payment for all customs and other State charges; 2. The substance must be fitted for monetary purposes either in the shape of bullion reserves against the issue of credit instruments, or in the shape of coin; 3. The substance must be made unlimited legal tender. Gold and silver are at present the two standard substances and measures of value in use among the trading nations of the world.

II. An effective monetary system exists only where credit instruments are convertible into the standard substance without question, delay, or expense, at the will of the holder of the credit instrument. Only such countries possess effective monetary systems.

III. Credit instruments in an effective monetary system are only the tokens of the standard substance. Metal instruments, other than those of full weight of standard substance, are only tokens of the standard substance, such as silver and copper in the British Isles.

IV. The mass of the standard substance and the tokens thereof combined have no greater effect upon prices than if the whole intermediary in effecting exchanges consisted of the standard substance in countries possessing effective monetary systems.

V. In countries possessing effective monetary systems prices and rates of exchange are definite weights of standard substances.

The writer is prepared to demonstrate and illustrate these propositions so soon as a convenient opportunity presents.

The Science of Money.

The foundation of the science of money must be laid with the concrete of the "logic of the unit of weight system."¹⁸ Its superstructure must be braced and compacted with the metal bands of "a masterly skill in bullion and coin,"¹⁹ springing from a thorough acquaintance with foreign and colonial exchanges of gold, silver, either gold or silver, and inconvertible paper; also a sound knowledge of the terms and conditions of a standard of value for monetary purposes. The topstone must be hewn from the quarry of common sense and experience, and be the truth that "money does its work by means of its value."²⁰

Each country should at once possess an exchange calculus formed on the lines of the exchange calculus for the British Isles furnished in the Appendix of Miss E. C. Sharland's *Coin of the Realm, What is it?*²¹ This calculus on the unit of weight system, should form an important part of the education of all young people. Each museum, especially commercial museum, should at once possess a case containing facsimiles of the obverse and reverse of the twelve gold and thirteen silver weights of fine gold and fine silver upon which the exchanges of the world are based; with such other information as my investigations can afford. All interested in the spread of true knowledge should insist upon the fine weight of metal on issue from the mints being stamped on the reverse of the coin. By these means the disgraceful ignorance upon the subject of money can be removed in a few years.

 IV.—*Index Numbers.*

THE following is taken from the November number of the *Bankers' Magazine*:—

"At a meeting of the British Association on the 9th September, the question of 'Index Numbers' was brought under consideration. The committee appointed to inquire into the subject reported to the following effect:—(1.) A special commission to be appointed to collect prices of such principal articles of production and consumption as may, from time to time, be directed by order in council. (2.) The commission is to appoint inspectors of prices in towns, and to direct by order in council that persons buying and selling in these towns, &c., are to make returns in the prescribed form to the inspector. (3.) Persons failing to make a return or making a false return are to be liable to a penalty of 20*l.* on conviction. (4.) The commission shall publish, from time to time, in the *Gazette*, in the prescribed form, the prices so obtained. (5.) The commission shall also publish a statement of the average prices

¹⁸ M. Leroy-Beaulieu, 1889.

¹⁹ William Horsley, 1753.

²⁰ Bonamy Price, 1882.

²¹ Published by Waterlow and Sons, Limited, London Wall, E.C.

of each of the specified articles for the ten years immediately preceding, and for each of these years; and the prices so declared shall be taken to be the par prices for the purpose of this Act. (6.) In January the commission shall publish the prices for the previous year; and a table of the proportion of these prices to the par prices, each of the par prices being reckoned for this purpose as 100, and the proportion in each case being stated in the form of the proportion to 100. The sum of these proportions shall also be stated. The table may be divided into parts, and the sum of the proportions in each part stated separately. The sum of the par prices, each reckoned as 100, shall be called the par index number, and the sum of the proportions in each year shall be called the proportionate index number for each year; and the sum of the par prices for each part, and of the proportions in each year, shall be called the par index number, and the proportionate index number for each part. (7.) It shall be lawful in all contracts for payments in money to express that the payment is to be made for a given year in the proportionate index number for that year, either for the whole of the said table or for a part of it, and thereupon payment may be made in such sum of sterling money as will correspond in respect of the sum contracted to be paid to the proportion which the proportionate index number bears to the par index number. (8.) Unless where stipulated to the contrary, all pensions, annuities, and salaries receivable and payable by the Government, and which may be fixed after the passing of this Act, shall be paid in the proportionate index number. (9.) New articles may be introduced into the list and the table, from time to time, by order in council.

“Appended to the scheme were the remarks of Professors Foxwell, Edgeworth, Marshall and Sedgwick, and Mr. Giffen.

“Professor Foxwell said he should regard returns as of great value, quite independently of any need for an index number. He thought it would be convenient to derive the proportionate numbers, not directly from the par number, but indirectly from the proportionate number next preceding. He did not understand that details of weighing and adjustment were excluded, and he would prefer a rough system of weights to no weights at all. For different purposes we might require different systems of weights. The price would be the same for all. The main purpose should be to measure variations in general purchasing power of the currency, not merely over commodities proper, but over everything money will buy or pay for, except services. He would rather not have clause 8. It was equivalent to saying that while all other incomes might increase or diminish, the particular ones mentioned should be stereotyped. The normal condition was steady prices of commodities, and gradually increasing incomes, both in money and goods.

“Professor Edgeworth said his only scruple was whether it is advisable to omit all use, and even mention, of weight, or relative importance attached to the different prices which enter into the computation. The discussions of the committee have shown that this principle is involved in most of the current definitions of an

index number regarded as a measure of the variation in the value of the monetary standard.

“Professor Marshall thought that the deliberations had not been carried far enough to justify specific proposals. Statistics ought to be obtained both of the prices and of the volumes of productions and consumption of the chief articles; and a Royal commission (or departmental committee) should be appointed to examine experts, both Government officials and private traders, as to the best ways of getting the requisite (approximate) facts. The commission would require to work for two years or more before reporting, and would then be in a position to draft an Act. The statistics which were ultimately collected should be used in the formation of several official index numbers, each of which should be specially adapted for some particular purpose; and they should be published in detail, so as to be available for use by private persons in the affairs of business and in statistical inquiry. The general method to be adopted should be that of ‘the weighted mean.’

“Professor Sedgwick agreed in preferring a ‘weighted index number.’ At the same time, he did not attach so much importance to this as he once did, having been convinced by previous discussions that the difference in practical result would not be practically great if a sufficiently large number of articles were taken as the basis of the computation. It would be more consistent with the previous utterances of the committee to recommend a weighted index number; and if an unweighted number was preferred, it was important that it should be somewhere indicated that the number of articles entering into computation would be large. Certainly the principle of a weighted number was more easy to explain and defend to the average intelligent person.

“Mr. Robert Giffen stated that he agreed generally with the observations of Professors Foxwell and Marshall. He did not think practically their effect should be to alter the draft Act, because they related very much to the detailed action of the commission or other body which would have to administer the Act. An Act of this kind, in his view, should be enabling and directory, rather than specific and precise, as to what was to be done, otherwise the business could hardly be worked, and incessant amendments would be necessary in the Act. He had not seen Professor Marshall’s observations, but he agreed with him that practically the only way to carry out ‘weighting’ in such a business was for the commission intrusted with the administration to group the articles as in fact suggested in the draft. He was hardly prepared to recommend that a commission should be appointed to bring an index number into use at once.”

V.—*Note on the Imperial Census of India of 1891.*

By F. J. MOUAT.

ONE of the earliest enumerations of the people of the largest and most important province of India, was that of Bengal, made in 1872 with scientific care and precision by Mr. Henry Beverley, then Inspector General of Registration in Bengal, and now a Judge of the High Court of Judicature in Calcutta.

A masterly paper on the subject was read by himself before our Society in March, 1874, and is contained in vol. xxxvii of our transactions. It attracted considerable attention, and showed the exceptional difficulty of the task entrusted to him, and revealed the admirable manner in which it was executed by him. It proved that the highest of the previous conjectural speculations on the subject was exceeded by more than 20 millions of souls; and whatever doubts were entertained at the time as to the accuracy of Mr. Beverley's figures, were entirely dispelled by the more extended census taken in 1881 of the whole of British India, with its independent and feudatory States.

A memorandum of the results of this second census was forwarded to the Viceroy of India by the Census Commissioner, Mr. (now Sir) W. C. Plowden, M.P., and is contained in vol. xlv of our transactions. This memorandum was accompanied by the figures of the rough results of the enumeration.

Upon the report of the portion of it relating to Bengal, drawn up by Mr. Bourdillon, of the Bengal Civil Service, at that time Inspector General of Registration in that province, Mr. Beverley sent an interesting note to this Society, reviewing his own report by the light of the more recent enumeration of 1881. This exhibited, considering the circumstances, the little short of marvellous accuracy of the figures obtained by him under much more difficult and exceptional circumstances. In 1872 the question was entirely new to all the parties concerned, the officers and agents engaged in the work, as well as the natives of the province, the objects of it: hence the operations were conducted with the utmost caution and reserve, to avoid the creation of alarm among some of the most timid and superstitious of the human race.

The second census then was conducted under much more favourable auspices as concerned all parties, so that its having upheld the general accuracy of Mr. Beverley's work was most creditable to him, and to the agency employed by him.

The next imperial census of India is to be taken in February, 1891, and the following interesting note of it has been furnished by Mr. J. A. Baines, the Imperial Commissioner, to whose supervision and direction this gigantic operation has been confided:—

The Census of India, 1891.

“The next imperial census is to be taken on the night between the 26th and 27th of February next, except in the desert and hilly country, where it is impracticable for an enumerator to compass

his beat in the course of the night. In such tracts the census will either be taken in the daytime of the days above mentioned, or, as in the wilder parts of the forests of Assam, the Central Provinces, and the Coromandel coast, will be spread over a fortnight or so, provided that there is no danger of re-enumeration of the population of those tracts in British territory on the night of the regular census.

"The census will include all the feudatory States in India, not reckoning as such Nipal and Bhutan, or the border tribes of Biluchistan, or the coast settlements dependent on Aden, on the African shore. For the most part the enumeration in these States will be conducted in the same way as that of British territory, but exceptions will be made where the State agency is deficient, or the country too wild for a night census. Amongst the areas which will come within the scope of the operations on this occasion, and which were not included in the last census, will be Kashmir, Sikkim, Upper Burma, and a portion of the frontier tribes in Assam and the far east. Allowing for the natural increase of the population in the districts enumerated in 1881, for the greater accuracy expected in the census in the larger feudatory States, and for the territory added to the area enumerated, the population to be dealt with will probably not fall far short of 280 millions.

"The number of enumerators required for the operation, on the system necessitated by the general illiteracy of the population of India, viz., that of having the schedule books written up *for* instead of *by* the householders, is expected to slightly exceed a million, using some 70 million schedules in 17 different characters, not counting the small number of forms in the dialects of the hill tribes in the north of India, such as Nipáli, Khási, Garwháli, Tibetan, &c. In the smaller provinces the abstraction of the results will be carried out at one central office, but elsewhere it will be necessary to distribute the work by divisions or districts. The classification and grouping of the variable statistics, such as caste and occupation, will everywhere be entrusted entirely and solely to the Superintendent of the provincial operations, who works immediately under the Imperial Census Commissioner, on lines laid down uniformly for the whole country.

"The schedule adopted differs but slightly in scope from that used in 1881. A separation has been effected between religious divisions and social classes: that is, in place of two columns, four have been assigned to these subjects, to avoid the confusion found on the last occasion. These columns are headed respectively: religion; sect of religion; caste, tribe, or race, as the case may be; and subdivision of caste, tribe, or nationality. A column has been added to show the language known by the persons returning themselves as able to read and write, provision being made in the instructions to allow the entry of English where that language is known alone, or in addition to an Indian or other dialect. The most important change, however, is in the return of occupation, in which the general distinction between worker and non-worker is more or less obliterated, and the results sought for are made into the number of persons supported by each occupation, instead of that

of the number working at it only. Tabulation by age-periods will be relied on to eliminate those who are too young to work at all, or to work regularly, and a subsidiary tabulation is arranged for of the 'dependents,' as distinguished from the 'workers' in connection with each item. This innovation was pressed upon the government of India by a conference of the superintendents of the census of 1881, which was held in December, 1889, on the grounds that the results of the last enumeration were worthless so far as a full return of the workers only is concerned, whilst the tendency of the native of India is in the direction of the instructions above mentioned. It may be noted that these instructions differ materially from those used on two occasions in England and Wales, where confusion arose as to the term 'head of family,' and as to the occupation of the females of a family, since the Indian rule enjoins the distinct entry of the occupation of any person, man, woman or child, who exercises any regular or independent occupation, *and*, in the case of those who have no occupation or independent means of subsistence, the entry prescribed is that of the person who supports them, whether the head of the family or another. It also differs from the French schedule in limiting the dependence to the persons directly supported, not including the servants of the person supporting, who return their occupation of service independently. The authorities admit, however, as all must do who have experience of the returns of occupation at a census, the improbability of getting trustworthy results, and look forward only to an improvement on those of 1881. In order to ascertain accurately the distribution and supporting power of industries in a country, the expedient of a separate and special census must be adopted, as in Germany, and luckily the conditions of life in India are not yet sufficiently complex to render so costly an operation necessary.

"The general tables into which the results of this census are to be compiled have also been published, and some valuable additions have been made to those of 1881. Education, for instance, is shown by age-period, as well as by religion, and caste or race is introduced in connection with the infirmities enumerated. It is left optional with the provincial authorities to tabulate in the same manner the important statistics of marriage or education. Thus information will be available as to the localisation amongst certain classes of the population of leprosy or insanity, of the practice of infant marriage, and the prohibition of the marriage of widows; and it can also be shown what proportion the educated classes, as well as individuals, bear to the masses of the population of the country.

"The whole of the literature of the operations up to the point when the schedules are collected for abstraction has been published in an official volume, a copy of which has been forwarded by the Census Commissioner for India to our library."

In order to admit of a comparison of the figures of the approaching census with those of the rough note of 1881, the tables published in 1882 are subjoined, as containing the corrected figures of the final report:—

TABLE A.—*Statement showing the Population by Sex of the several Provinces in India according to Census of 1881 and previous Census.*

Provinces.	Population according to Census of 1881.			Population according to previous Census		
	Both Sexes.	Males.	Females.	Both Sexes.	Males.	Females.
Bengal.....	69,536,861	34,625,591*	34,911,270*	62,709,405	31,343,746	31,365,659
Assam	4,881,426	2,503,703	2,377,723	4,056,054	2,037,694	1,908,360
Madras	31,170,631	15,421,043	15,749,588	31,597,872	15,874,235	15,723,637
Bombay	14,040,591	7,180,888	6,859,703	14,038,359	7,266,180	6,772,179
„ native States	6,941,249	3,572,355	3,368,894	6,786,855	3,542,950	3,243,905
Sindh	2,413,823	1,316,830	1,096,993	2,192,415	1,216,208	976,207
N. W. Provinces	32,720,128	17,060,901	15,659,227	30,769,056	16,406,833	14,362,223
Rampore.....	541,914	282,359	259,555	—	—	—
Native Garhwal.....	199,836	102,340	97,496	—	—	—
Total	33,461,878	17,445,600	16,016,278	—	—	—
Oudh	11,387,741	5,851,655	5,536,086	11,219,675	5,822,218	5,397,457
Punjab—						
British territory.....	18,842,264†	10,202,083	8,640,181	17,611,498	9,595,434	8,016,064
Native States	3,861,683	2,112,303	1,749,380	—	—	—
Khyber troops	8,173	7,970	203	—	—	—
Total	22,712,120	12,322,356	10,389,764	—	—	—
Central Provinces	11,548,511	5,827,122	5,721,389	9,251,229	4,708,500	4,542,729
Berar	2,672,673	1,380,492	1,292,181	2,231,565	—	—
British Burma	3,736,771	1,991,005	1,745,766	2,747,148	1,435,518	1,311,630
Mysore	4,186,188	2,085,842	2,100,346	5,055,412	2,535,924	2,519,488
Coorg	178,302	100,439	77,863	168,312	94,454	73,858
Rajputana	10,268,392	5,544,665	4,723,727	—	—	—
Ajmere	460,722	248,844	211,878	426,268	233,368	192,900
Central India	9,261,907	4,882,823	4,379,084	—	—	—
Baroda	2,185,005	1,139,512	1,045,493	2,000,225	1,057,640	942,585
Hyderabad	9,845,594	5,002,137†	4,843,457†	—	—	—
Travancore	2,401,158	1,197,134	1,204,024	2,308,891	1,148,689	1,160,202
Cochin.....	600,278	301,815	298,463	601,114	302,373	298,741
Grand total	253,891,821	129,941,851	123,949,970	—	—	—

* Population details for Sikkim wanting, excluding Naga Hills, not censused.

† Excluding population of the Lahoul and Spiti districts, not censused.

‡ Population details for Paegah districts wanting.

TABLE B.—*Comparative Statement of Populations according to Census of 1881 and previous Census.*

Province.	Population according to Census of 1881.	Population according to previous Census.		
	Both Sexes.	Both Sexes.	Year of Census.	Difference per Cent.
Bengal	69,536,861	62,709,405	1871	+ 10'9
Assam	4,881,426	4,056,054	'71	+ 20'3
Madras	31,170,631	31,597,872	'71	— 1'3
Bombay.....	14,040,591	14,038,359	1872	+ 0'1
„ native States.....	6,941,249	6,786,855	'72	+ 2'3
Total	20,981,840	20,825,214	....	+ 0'7
Sindh.....	2,413,823	2,192,415	1872	+ 10'1
North-Western Provinces } (excluding Rampore and Native Garhwal)	32,720,128	30,769,056	1872	+ 6'3
Oudh.....	11,387,741	11,219,675	'68	+ 1'5
Punjab (British territory } only)	18,842,264	17,611,498	'68	+ 7'0
Central Provinces.....	11,548,511	9,251,229	'72	+ 24'8
Berar.....	2,672,673	2,231,565	'67	+ 19'8
British Burma	3,736,771	2,747,148	'72	+ 36'0
Mysore	4,186,188	5,055,412	'71	— 17'2
Coorg.....	178,302	168,312	'71	+ 5'9
Ajmere	460,722	426,268	'66	+ 8'2
Baroda	2,185,005	2,000,225	'72	+ 9'2
Travancore	2,401,158	2,308,891	'75	+ 4'0
Cochin	600,278	601,114	'75	— 0'14
Grand total of seventeen } provinces	219,904,322	205,771,353	....	....

Note.—Increase over last census = 14,132,969, or about 7 per cent.

It is difficult to overestimate the magnitude, complexity, and absorbing interest of the task which Mr. Baines and his coadjutors have before them, for in their hands is the greatest operation of its class that has ever been performed by any nation.

Its results will again add force to the conviction, and prove the truth of the statement of De Tocqueville, that England owes her position in the world to the manner in which she has conquered and governed India. For this, and other reasons of a like kind, it is difficult in this country to realise the overwhelming nature of the responsibilities inseparably connected with Indian administration.

I myself endeavoured in 1868 to ascertain the castes and classes of the criminal population of Lower Bengal, when the prisons of that province were under my charge, and I collected detailed information regarding them which I printed *in extenso* in the

appendixes to my report of 1869, where they occupy no less than 283 pages of print. Some of the returns forwarded to me by the district officers were very valuable, hence I was anxious to put them all on permanent record exactly as they came to me, as important landmarks prior to the taking of any census. My intention was to analyse them subsequently; but the prisons passed out of my hands in the following year, and nothing has been done in the matter since. These are now, however, in the hands of Mr. Baines, and I hope may prove of use in dealing with the exceptionally complex and difficult question of caste, of which some of the leading features are fast disappearing.

All the schedules required for this census are again being printed in the press which I established in the Alipùr Jail so many years since, and I consider that it is no small triumph of the principle of well regulated and remunerative prison industry, which I advocated and carried into effect some thirty-five years since, and which is still among the nuts that the Penitentiary Congress at St. Petersburg attempted to crack in June last, with what effect we shall learn when their report is issued.

VI.—*Notes on Economical and Statistical Works.*

Reports from the Select Committee on Town Holdings. London: Eyre and Spottiswoode, 1886, 87, 88, 89, and 90.

In 1886 a Select Committee of the House of Commons was appointed "to inquire into the terms of occupation and the compensation for improvements possessed by the occupiers of town houses and holdings in Great Britain and Ireland, and to inquire into the expediency of giving the leaseholders facilities for the purchase of the fee simple of their property, and also into the question of imposing a direct assessment on the owners of ground rents and on the owners of increased values imparted to land by building operations or other improvements." The terms of reference were so comprehensive that the Committee, which was re-appointed in the sessions of 1887, 1888, and 1889, was wholly engaged during two of these years in hearing a voluminous mass of evidence, although it expressly excluded Scotland from the scope of its inquiries. In 1889 it reported, but reserved the question of the taxation of ground rents for the hearing of further evidence, part of which was taken during last session, and for a subsequent separate report.

The report, which was submitted in 1889, consisted of five sections. The Committee found that the principal tenures of town holdings in England and Wales were five in number. The *freehold* system prevailed in the majority of towns in the Northern, Midland, and Eastern counties. The *fee farm* or *chief rent* system, under which the land was "granted in perpetuity, subject to a fixed annual payment," existed in a few towns like Manchester. The *long lease* system for periods of nine hundred and ninety-nine years, or otherwise exceeding ninety-nine years, was found in

"many towns principally situate in Lancashire and Cheshire;" the *leasehold* system of ninety-nine years or under was, "by far the most usual" in London and "many of the towns in the South and West of England;" and the "*life-lease* system," which is described as "objectionable and disadvantageous," existed "principally in Devon and Cornwall." Passing in the second section to the "terms of occupation, and the right of compensation for improvements," the Committee report that, "in most towns," "only a small proportion of the occupiers are the owners of the houses they inhabit." They think that "compensation" ought to be given to all tenants for "improving the sanitary condition of" their "premises," and, in future contracts, might be secured to the "tenant of trade or business premises" "for such improvements as he may have *bonâ fide* made for the purpose of carrying on his trade," and "as may have added to the permanent letting value of the premises." But the "exercise of this right would have to be safeguarded" to prevent annoyance or embarrassment to the lessor. They approve of a claim for compensation, in the case of dwelling houses as well as of trade premises, when the tenant effects "substantial improvements with the previous written consent of the landlord."

In the third section they deal with the disputed question of leasehold enfranchisement under three heads. They first state and examine the charges brought against the leasehold system. On the one side it is contended that it discourages the erection of houses, and encourages negligence in building, and, especially towards the end of the lease, in repairing; on the other that it enables a builder to devote his whole capital to building, and elicits the interest of the landlord in securing a "substantial building" at the outset, and its maintenance in a "good state of repair." The Committee agree that the leasehold system "possesses considerable advantage and convenience," and that, "except in places where the sentiment of the district is strongly opposed," "houses are built and building estates are developed more rapidly" than under the system of "freehold purchase." But they think that "as a general rule the nature of the tenure" has no "considerable effect in determining the class and quality of houses erected," and that the "state of maintenance and repair" "depends" "upon the character and position of the landlords, lessees, and occupiers." They consider that short leases have in some places hindered the development of co-operative societies; but that the original lessee is, "in the vast majority of cases," "competent to make his own bargain with the landowner," and, "in most instances," "probably makes a good profit out of the transaction"; and that "there is no injustice in a man having to give up a house in pursuance of a contract of which he has full knowledge," and "all the benefits for which he stipulated." "As a general rule" they are "unable to say" that "there is much ground of complaint" about restrictive covenants and fees; but they are of opinion that the "origin" of the leasehold system is due "partly" to "legal inability to lease on the part of owners of settled estates" or "corporations," and "partly" to the "preference of landlords for short terms," rather than to "preference on the part of the public," although, they add,

this does not imply the absence of freedom of contract. They advise "legislation with a view to putting an end to" life leaseholds.

They then proceed to consider the "alleged advantages" of the leasehold system, over and above those previously noticed. The "laying out of estates" "in large areas" by a "far-seeing freeholder" does not belong incontestably to it alone. The "periodical" rebuilding, however, of houses when they "revert" to the freeholder is, "in most cases," a real advantage; and so is the greater facility for "large improvements of a more or less public character." Coming directly to "leasehold enfranchisement," they define this as a principle which will "enable any leaseholder, holding under a term of which at least twenty years are unexpired, to acquire compulsorily the freehold of the premises comprised in the lease at a price to be ascertained either by Tables or, in the absence of agreement, by some legal tribunal." The "alleged advantages" of the proposal are the "promotion of thrift" and "security to traders and others." The Committee, however, do not think that the "working classes" in London and "most large towns" hold under tenures of a length or character which would enable them to "materially benefit" by the scheme; and they "consider it doubtful whether the power of purchasing" "would be largely utilised by the trading and manufacturing classes." The scheme is opposed on various grounds. It would seriously prejudice the erection of industrial dwellings, the interests of such landowners as "municipal corporations" or public trustees, and the position of owners of reversions and ground rents. Nor is the mode of ascertaining the purchase money easy to determine, while the value of the property affected would be "enormous." The "analogy" between the proposal and copyhold enfranchisement and tithe redemption is not "just;" the lessee, who is as often as not a middleman, would, as a rule, be entitled to enfranchise instead of the actual occupier; and in their fourth section the Committee state that they are "unwilling to recommend the adoption of any general scheme," though they "are of opinion that there are places where some plan for facilitating the acquisition by leaseholders of the freehold of their houses might, with advantage, be put into operation as regards limited areas, in which there are a large proportion of occupying leaseholders of the industrial classes (including clerks and small traders) who are able and willing to purchase the reversion of their properties." In the fifth and concluding section of the report they refer to the special circumstances of Ireland, to which the evidence taken in the session of 1886 almost exclusively related.

If the report of the Committee on one of the controverted questions referred to them for inquiry is thus as balanced a compromise between opposing views, as one of three alternative reports is likely to be, the other question of the taxation of ground rents seems to be no less open to a similar interpretation and conclusion. The question was raised incidentally in the examination of witnesses in previous sessions, but its thorough investigation was postponed. The report of 1890 now before us contains the evidence which

was taken on the matter during last session. It exhibits as "remarkable" a "conflict of opinion" as the Committee notice on the question of the advantages and drawbacks of leasehold tenure. Independent advocates of the taxation of ground rents, like Mr. Sidney Webb, members of the London County Council such as Sir Thomas Farrer, Mr. Costelloe, and Mr. Charles Harrison, professed economists like the late Mr. Thorold Rogers and Mr. Munro, and opponents, both surveyors and others, of the proposals, have been examined; and it is scarcely an exaggeration to say that there is no single point of importance on which directly conflicting evidence could not be quoted. The present incidence of taxes, and the advisability and effects of new methods of imposing them, are alike questioned. It is indeed admitted that the apparent incidence of local rates now falls upon the occupier in most cases; although Mr. Harrison mentions a large number of small tenures in London where the "intermediate" owner enters into an express covenant to pay the rates directly himself. But the dispute turns upon the question of the real rather than the apparent incidence. According to old economic theory, a tax levied in proportion to the rent of a house would fall partly on the owner, and partly on the occupier. It would fall on the occupier so far as it was a tax on the building, for it would otherwise *pro tanto* diminish the profits of building, discourage the builder, and tempt capital to withdraw from the building trade into other occupations, where it would secure the normal, average rate of interest; and, in order to induce it to return to the building trade, the demand for houses would have to raise the price to a figure sufficient to cover the tax and yield the ordinary rate of profits. It would fall on the owner so far as it was a tax on the ground, for, in estimating the rent that he could afford to pay, the occupier would take the tax into account, and the advantages of the site must be such as to yield him the ordinary profits of his trade or occupation. It is only the surplus above this which would be available for rent; and, if part had to go in taxes, so much less would be left for rent. This is the old economic theory as stated by Mr. Webb in his evidence; but it is disputed on various grounds. Mr. Webb himself assails both portions of the theory. He does not think that the part of the rates which is proportioned to the value of the buildings falls upon the consumer, because the argument "assumes that there is no other shoulder on whom the builder can shift it, that he must get his normal interest, that he is between the fixed point of the ground landlord and the shifting price of the consumer, and that one of them must give way." But, he contends, "the ground landlord is not a fixed point, and, in the passage of agricultural land into building land, there is always a large jump in value." "The freeholder, getting in any case a much larger than the agricultural value, has no fixed point of resistance," and the "better economic opinion would now be that, in the same sense that the rate on land falls upon the owner, the rate upon buildings falls equally so." This change in value as land passes from agriculture to building is employed to another purpose by Professor Munro.

He thinks that "the circumstances are so different that you cannot apply" the "theory of agricultural rent to the rent of building land" "without great qualifications and great modifications;" and that these modifications affect the incidence of that part of the rates which is levied in proportion to the value of the ground. In the case of agricultural land, it is true that "after the farmer has received a remuneration for himself and his outgoings there is a certain surplus over, and it is out of that surplus that all rent and rates must come. If, therefore, the rates are high, the rent will be so much less." But, while the "landowner of agricultural land requires to let his land in order to obtain a return," and has to be "content with the surplus that remains over," "in the case of agricultural land that may be turned into building land there is no necessity for the owner to let it for building purposes. As agricultural land he is obtaining a fair ordinary return for it; and anything that he obtains over and above the agricultural rent is a pure and absolute gain in itself." "He can control the market" "to a very much greater degree than a landowner can control the market for agricultural land."

The distinction which is thus drawn between agricultural and building land affects the argument of the incidence of rates in yet another way. From the side of the tenant it is obvious that the old theory rests on the absence of what Mr. Webb calls "economic friction." But, he maintains, this "economic friction" "eats away" the theory. The "incoming tenant is very ignorant as to what the economic rent is," as it is "not written on the land," but is a "matter of experiment." There are "large spaces" in London "which are economically equivalent to Connaughts," in so far as the "inability to move," and the "absolute necessity of being near their occupation," lead "the poor in certain localities" "to pay much more than anything which could reasonably be called the economic rent." The actual "competition rent" may, therefore, be above the economic rent; and the extent to which this is the case is the "measure of the extent to which the rates fall on the owner," and it is "indeterminate." In many cases, again, there may be several intervening stages between the actual occupier and the ultimate ground landlord; and while "economic friction" may be absent in one stage of the series, or inconsiderable in degree, it may be a serious reality in another. "It is with the immediate leaseholder," Mr. Webb remarks, "that the occupier adjusts his matters." The economic theory, in fact, of the incidence of the rates rests on the assumption of perfect competition, in accordance with which the real incidence is shifted from one person to another; and, as this shifting requires an effort, Professor Rogers urges that the safer guide to follow in practice is the opinion that, in the absence of proof to the contrary, the bulk of the incidence of taxation remains where it is directly imposed. According, again, to the theoretical assumption of competition, the intending tenant should know at the moment of entering into the contract with the owner all the burden of rates which will fall upon him during the whole period of the contract. But, Mr. Munro urges, the distinction between agricultural and building land vitiates this assumption;

for "at the time" when "the builder purchases the land from the landowner, the only rates that the land is liable to are rates for agricultural purposes, and the future increased rates that may fall upon that land in case it is built upon, and in case a house is erected and occupied, do not at all enter into" consideration. Sir Thomas Farrer, quoting from Mr. Göschén, says that "to sum up the case of house property generally, it appears that the owners of building land, like the owners of other land, have to submit to a reduction of rent equivalent to the average amount of rates which the builder or other lessee calculates that he would have to pay according to the average of past rates; and that, as regards any subsequent excess after the owner of the soil has made his bargain, it is borne, in the case of leases, exclusively by the occupier. When leases expire, and in the case of short tenancies, in fact wherever readjustments take place, the above excess is borne sometimes by the leaseholder or owner of the house, sometimes by the occupier; according to the state of supply and demand." Quoting from another writer, he remarks that, in a "community which is prosperous and increasing in population," the house rates, "however levied," will fall "as a rule" ultimately on the "tenant," and, in the reverse case, on the landlord. "Between the extremes the demand for houses will fluctuate, and the rates be ultimately divided between landlord and tenant in every variety and degree."

The apparent incidence of new rates tends thus to be the same as their real incidence during the continuance of the contract since the commencement of which they have been imposed; but the real incidence tends, in the absence of "economic friction," to be shifted from the occupier to the owner when an opportunity for readjustment is presented. The question, therefore, turns on the length of leases and the dates of imposition of new taxes. On this point it is contended that the growth of urban rates has been so great of recent years, that it could not have been contemplated when many of the leases for long periods were arranged, and that consequently the real incidence of the larger proportion of the rates falls not on the owners as it should, but on the occupiers. It is also contended that much of the expenditure for which these rates are raised, is devoted to improvements of a permanent character, such as drainage works, which add to the capital and reversionary value of the land; that the loans which have been raised for the purpose of these improvements are paid off by instalments, which will extinguish the principal of the debt before many leases for long periods have terminated; and that the landlord will thus obtain for nothing the reversionary benefit of what has been executed at the cost of the tenant. On the other hand, it is argued that many of the tenancies are for short periods, and admit of frequent readjustment; that many have commenced within a recent date, when the increase of the rates had already taken place; that much of the expenditure is for objects which are rather of immediate benefit to the occupier than of ultimate advantage to the landlord, or of general benefit to the whole community, bondholders as well as landlords; and that when the landlord enters into the complete reversion of improvements of a permanent character, he will have to pay rates accord-

ing to the increased value of his land, and contribute towards the repayment of the capital debt, if it is not already extinguished. In cases such as that of Manchester, where the fee farm or chief rent system prevails, he will never enter into the reversion at all, although he will also, it is true, escape entirely the liability to readjustment of the contract for rent.

It is for the reasons which have been mentioned, that it has been argued that the apparent incidence of the rents should be made in some manner to fall where the real incidence actually rests or should rest; and that on the one hand the owner, who may in the long run pay the rates, should have an interest and a voice in the administration of local affairs, and that on the other the occupier should not be led to oppose improvements of general advantage by the fear, groundless or justified, of increasing the burden of the rates upon himself. But the difficulties of determining the real incidence affect the methods of reform as well as the equities of the present position. Some witnesses hold that the rates should be separately and directly apportioned on the owner or occupier according as they benefit the one or the other, that the land tax should for instance be levied on the owner, and the water rate on the occupier. Some surveyors admit, and some deny, the possibility of distinguishing the value of the ground from the value of the buildings upon it for the purposes of separate assessment. Some witnesses accordingly propose that the taxes should, as now, be collected from the occupier, but that the real incidence should be clearly shown and manifestly distinguished from the apparent incidence by conferring on the occupier an "inalienable right" to deduct a certain proportion of the aggregate rates from the rent he pays, and so on, until through the successive stages of holders, the ultimate owner is reached. Some witnesses are in favour of interference with existing contracts on the ground of the subsequent imposition of new taxes, or of old taxes so largely increased in amount as to be practically new. Others insist rather on the general equity of making all who are interested in the results of local expenditure contribute towards it, and on the general power of the State to modify inequitable contracts. Some witnesses hold that the reversionary interest of the landlord in permanent improvements is exhibited in the increased capital-value year by year of his ground-rent, and that it can be immediately reached by taxation; others argue that it cannot be directly reached, but that it might be so indirectly, either by charging the principal of the outstanding local debt upon the owners instead of the occupiers, or by modification of the death duties and their appropriation, in part, to purposes of local administration. Again, it is argued by some witnesses that taxation should be imposed on unoccupied land, at its present or immediately prospective value for building purposes, on the ground that it is deriving benefit from the expenditure of the rates, or that otherwise landowners would be able, by keeping their land out of the market, to raise its price artificially and in that way cause the rates nominally levied upon their rents, to fall in reality upon their occupiers. Some witnesses argue that such taxation would not only relieve the burden on the

other ratepayers, but would also prevent overcrowding on limited areas through want of fresh building land, while others maintain that it would injure the revenue in the long run, and, by forcing the land into the market too soon, induce the building of poorer and less valuable tenements than would be erected at a later and more natural time of sale.

Rapport adressé à M. Rouvier, Ministre des Finances, par M. Boutin, Conseiller d'État, Directeur Général des Contributions Directes, sur les Résultats de l'Évaluation des Propriétés Bâties. Paris: Imprimerie des Journaux Officiels, 1890.

In this report an account is furnished of the preliminary arrangements, the mode of execution, and the results of an important French official inquiry. The account is given with considerable detail, and is valuable as showing the nature of the evidence on which the figures contained in the forty-four tables which follow are based. In the first chapter a historical review is supplied of the different modes of assessing the *impôt foncier*, and of the results of the inquiries which had been instituted at different periods since the tax was first levied in 1790, with the object of ascertaining and rectifying inequality in its pressure on different parts of the country and varieties of landed property. The question has never been allowed to slumber, and the good intentions of the legislator have only been defeated by inadequacy of means. At first the complaints of inequality were met, in the absence of the exact basis of an accurate valuation on which to proceed, by successive reductions of taxation, amounting to some 87 million francs between 1791 and 1822; but the important step of distinguishing between property which did and that which did not take the form of buildings, was not effectually accomplished until 1883, although several governmental inquiries had been made in the intervening period. In the same year a valuation of landed property other than buildings was completed, and the exigencies of the budget combined with the pressure of agricultural depression and the suggestions of public opinion to urge the justice of a transference of part of the burden of taxation from this form of landed property to the other, and the desirability, with a view to this, of a full and accurate valuation of building property. In chapter ii M. Boutin describes the preliminary arrangements which were made for this valuation; and it is curious to notice that, by an application of the experimental method which Jevons recommended for social reform, trials were instituted in test districts to ascertain the probable duration and expense of the inquiry. In the third chapter the actual work of the inquiry is described—the co-operation of the local authorities, the selection of normal types by comparison with which the value of other varieties might be measured and classified, the employment, generally, of contracts for letting, and, to a smaller extent, of contracts for selling, as the bases of the valuation, and the mode of dealing with difficulties and discrepancies. In the fourth chapter M. Boutin reviews the facts which the inquiry has disclosed or established. Besides the towns, building property is found massed in the largest quantities in the

North and East, and is in these places where it is thus massed together most valuable. In number it has grown from an enumeration of 7,325,204 distinct properties in 1850 to 8,828,570, or at the rate of 41,760 per annum. In order to make the comparison accurate, the losses and acquisitions of territory between the two periods are eliminated. The total net income derivable from this source has increased by 1,348,109,925 frs., or 190 per cent., during the same period; and the average income per property from 97 to 233 frs. This increase in income has been common to all districts of the country, but the urban have naturally gained on the rural districts in the number of houses. After these general considerations, M. Boutin proceeds to deal with facts which relate especially to the contributions to the revenue levied from landed and other property; and he makes it apparent that the taxation on building property is not excessive in the aggregate, nor if it be equally distributed, burdensome in detail. But some redistribution is necessary, both as between particular districts of the country, and particular classes of building property. He shows that the number of *maisons ordinaires* has grown with the growth of the population, while the number of *châteaux* and *maisons extraordinaires* has remained stationary, partly in consequence of the general elevation of the standard of house accommodation, and the number of *usines* has declined owing to the increasing predominance of larger and more centralised but less numerous establishments. M. Boutin then describes the nature of the *surveillance* exercised over the inquiry by the inspectors of each *département*, the criticisms passed by the press, the resolutions of local assemblies, the zealous co-operation of officials of every degree, and the items of expense. In the ninth chapter he states that, while the primary object of the inquiry was the execution of the law passed in the French Chamber and Senate, the secondary aim of furnishing statistical material was not neglected. With this purpose in view a distinction was drawn between business and dwelling premises, and, among the latter, between houses occupied by the rich and the poor respectively. Information was also obtained on five points in particular. The classification of the property according to its letting value, the status of its occupants (whether owners or lessees), its saleable value, and its relation to the population of different districts, were investigated, and the inquiry embraced rural buildings. The most numerous class of houses possessed a letting value of 21 to 50 frs., and more than two-thirds of the whole number had a letting value of less than 100 frs. The houses occupied by owners represent, for the whole of France, 55.74 per cent. of the total number. The saleable value, which does not rest on such certain evidence, amounts to 49 *milliards*, 320,984,314 frs., being an increase of some 152 per cent. on that of 1850. The report is followed by tables in which the evidence thus summarised is furnished in detail; and to the tables are added four appendices, one on the valuations made between 1790 and 1889, the second describing the laws, instructions, and circulars relating to this valuation, the third containing an analysis of parliamentary documents and debates on the matter since 1876, and the last furnishing an

account of legislative provisions on the subject in foreign countries.

Die Hagelversicherungsfrage in Deutschland. Von Dr. Heinrich Suchsland. Jena: Gustav Fischer, 1890.

This book is one of a series of economic and statistical publications now being issued at Jena, some of which have been previously noticed in this *Journal*. The subject with which it deals is one of limited and special interest, in spite of the frequency and destructive character of hail storms on the continent; but it appears to be handled in a careful and thorough manner, and the larger question of insurance to which it is related is of more general importance. Dr. Suchsland discusses the matter from three standpoints, theoretical, historical, and critical; and he gives to his work the alternative title of a contribution to the criticism and reform of the German means of insurance against hail storms. The book consists of an introduction and three chapters. In the first the general nature of the problem and method of insurance against the damages and loss occasioned by hail storms are examined. The chapter is divided into four sections, dealing respectively at some length with the nature of hail storms and the relative frequency of their occurrence in different districts, more briefly with their destructive consequences to agriculture, and the methods of insurance in general and in particular against damage from hail storms, and lastly with considerable minuteness with the economic and technical aspects of the matter. While the first chapter thus relates to the theoretical side of the question, in the second it is approached from the historical standpoint. The history and the present position of insurance against hail storms in Germany is considered. The first section deals with the past history, and the second with the present position. The third is devoted to the consideration of the requirements of agriculture in the matter, and the fourth to a comparison of the provision made in Germany with that existing in neighbouring countries like Austria and France. The third and last chapter is critical and discusses various plans of insurance, whether they are made to rest on the compulsion and resources of the State, or on voluntary co-operation. The argument throughout is illustrated and supported by statistics, and some tables are appended showing the extent of the danger to be apprehended from hail storms, and the business results of the known German insurance societies, whether constituted on a shareholding or a mutual basis.

Die Nächste Volkszählung. Von Karl Theodor von Inama Sternegg. Wien: Alfred Hölder, 1890.

The general character and particular details of perhaps the most important of all statistical operations, the taking of a census, become matters of immediate practical interest to most nations of the western world with the commencement of each decade. There are some nations indeed which possess already a quinquennial and not merely a decennial census, but in Austria the interval between one census and another has of recent times been longer than in our own country by about a year. In the second part of the little

pamphlet before us Dr. Inama Sternegg prints the regulations made by that department of the Austrian Government whose function it is for the approaching census in that country. It is to be taken at the close of this and the beginning of next year, and it is thus separated by an interval of some eleven years from the last census, and that again from the previous census by a similar interval. With both these censuses, that of 1869 and that of 1880, Dr. Inama Sternegg institutes comparisons on points of method and arrangement in the remarks contained in the first part of his pamphlet. His experience as head of the Central Statistical Commission of the Austrian empire, and his repute as a statistician, combine with the interest at present attaching to census operations to lend importance to these remarks. He goes through the several headings under which information is obtained or desired, noting the improvements which it is proposed to make in the machinery of the next as compared with that of the preceding two censuses, whether with a view to securing greater accuracy or fuller information, and explaining the difficulties which have to be met, in some cases with every probability of success, while in others they seem to be almost, if not quite, insuperable. The regulations in the second part supply specimens of the different schedules which are to be filled in, and the whole pamphlet furnishes an authoritative account of the proposed *modus operandi* of the next Austrian census.

Baumwoll-Production Handel und Industrie im letzten decennium.
Von Regierungsrath v. Juraschek. Wien: Alfred Hölder, 1890.

In this short pamphlet of twenty-four pages, a statistical review is attempted of the course of the cotton industry during the last ten years. The author alludes briefly to the immense development of that industry which has taken place during the century since the invention of Arkwright, and to the way in which the exclusive predominance of America in the production of the raw material, and of Great Britain in its transformation into a manufactured commodity, has been affected, though not overthrown, by the discovery of other sources of production and places of manufacture. He then supplies various tables of figures accompanied by explanatory comments relating to the production and manufacture of cotton during the last ten years. The production of the raw material has increased from an annual average of 1,788.9 million kilograms in 1880 to 2,137.7 in 1888; the annual average consumption for 1884 to 1888 amounted to 1,844.74 million kilograms, and the number of spindles to 13,830,073, and of looms to 1,320,196. But these last figures do not relate, for the different countries entering into the enumeration, to the same year, and in the case of some of these countries the figures are altogether wanting. We think that the writer would have done well to specify in each case throughout his pamphlet the particular sources on which he relies for his information. The omission leaves it doubtful how far his figures are or are not estimates, and, if they are estimates, how far they are or are not deserving of credit. He compares them in some cases with those of the late Dr. Neumann-Spallart, and we

wish that he had followed the admirable example set by that eminent statistician in this important respect.

Allgemeines Statistisches Archiv, herausgegeben von Dr. Georg von Mayr. Jahrgang 1890, I Halbband. Tübingen: H. Laupp'schen, 1890.

The appearance of a new journal devoted to the study and improvement of statistics, must always be welcome to those who are occupied in other countries with the same important branch of knowledge; and it is the more welcome when it takes place under such favourable circumstances as those connected with the volume before us. Dr. Georg von Mayr is an Honorary Fellow of the Royal Statistical Society, and enjoys a high reputation as a statistician. His name as editor of this new publication furnishes a reliable guarantee for the honesty and consistency of the endeavour which will be made to preserve a high standard of excellence; and the programme announced by him in the preface is as comprehensive as it is, if we may be allowed to use the epithet in no derogatory sense, exalted. He hopes that his new journal will conduce to the advance of the theory and the practice of statistics; and he looks forward to the second of the two parts which are to compose the annual volume, as likely to afford a more complete realisation of his hopes than that furnished by the first. He embraces within the compass of his material the statistics of all countries; and the notices of statistical literature contained in the fourth section of this present volume comprise the writings of the French statistician M. Levasseur, and the official statistics of primary instruction in France; while the statistical results presented and examined in the third section include a very elaborate account, given with minute detail, of the finances of the United States of America. Dr. Georg von Mayr hopes that these notices of books will be followed in his second volume by a general conspectus of the statistical literature of the year. His journal is intended to consist of five sections. In the first the theory of statistics is to be treated; and by the distinct prominence which he thus gives to theoretical questions, he shows how firmly he is resolved to maintain the scientific character of the journal, and to promote the real permanent advance of the subject to which it is devoted. The nature, the instruments, and the methods of statistics are to be examined from various standpoints, but especially as regards their relations to the objects and action of government. In the second section more discursive investigations on what may be called the art or practice as distinguished from the theory are to be made; but the editor's previous insistence on the prominence of theory shows how sensible he is of the important influence exercised by this theory on the *technique*, as it may be called, of the subject. In this second section the progress made in this technical section will be reviewed. In the third section statistical results will be given; in the fourth, notices of books; and the fifth and final section is to be devoted to various miscellaneous matter, of which we have in this volume an account of arrangements made for the German

census, and of the *personnel* and other particulars of the statistical bureaux of the German Empire, and of the separate States comprised in it.

The programme which is thus sketched by Dr. Georg von Mayr is ambitious and comprehensive; but he makes no attempt to conceal his intention to be so, and the performance of the programme promises to justify his hopes, if the volume now before us may be regarded as a fair specimen. He has enlisted the services of a number of industrious and able writers, who discuss their subjects with the thoroughness which proceeds from knowledge. In the first section, on statistical theory, Dr. Inama Sternegg gives an account of the past history and the present condition of statistical instruction in various countries. He shows what provision has, or has not, been made, directly or indirectly, in the universities, and the intermediate and elementary schools, of the different European countries and of America. He points out the nature of the instruction given, and the direction which it has taken at successive periods of time during the last two centuries or thereabouts, as it has passed from a confused mass of objects of study to more limited and profitable fields. He exhibits its relation with other branches of knowledge, such as geography, philosophy, mathematics, and medicine. He notices the work of the statistical "seminars" which have been established, and he then passes to the intermediate and elementary schools. This account of Dr. Inama Sternegg's article will serve to indicate the manner in which the other articles are handled. The editor himself writes on the relations of governmental administration to statistics—a subject on which his previous experience as director of one of those bureaux of statistics whose work he notices in the course of this article, qualifies him to speak, as well as his former position as Under Secretary of State in the Imperial Ministry for Alsace-Lorraine. He is followed by Dr. Ernst Mischler, on the important question of the period of time selected as the basis of statistical inquiry. In the second section, which is devoted to the technical aspects of the subject, Dr. Heinrich Rauchberg discusses the most recent developments of population statistics, and Dr. M. Schumann treats of the method and details of statistics of agricultural cultivation and produce. The third section is devoted to statistical results. Herr M. Brückner writes on the growth of population in the States of the German Empire. He examines in succession the rate of increase, its character, especially as regards the physical condition of the people, and the movements of the population; and he illustrates and supports his conclusions by different tables. Dr. H. von Scheel, in the next paper, treats of criminal statistics, with especial relation to the German Empire; and Dr. S. Hausmann, in the third paper, discusses the statistics of the German Universities. In the fourth and last paper, which is full of detail, and especially elaborate and exhaustive, Herr Richard von Kaufmann examines the finances, both of the Federal and the States Governments, of North America. These papers are followed by notices of books, and these notices by that miscellaneous matter which we men-

tioned before. We offer our congratulations to Dr. Mayr on the excellent start which has been made in his new venture, and we look forward with interest to his next number.

VII.—Additions to the Library.

Additions to the Library during the Quarter ended 31st December, 1890, arranged alphabetically under the following heads:—(a) Foreign Countries; (b) India, Colonial and other Possessions; (c) United Kingdom and its several Divisions; (d) Authors, &c.; (e) Societies, &c. (British); (f) Periodicals, &c. (British).

Donations.	By whom Presented.
(a) Foreign Countries.	
Argentine Republic—	
Commercio Exterior. Datos trimestrales del, Año 1890. Nos. 66, 67	The National Department of Statistics
Commercio y de la Navegacion. Estadistica del, correspondiente al año 1889. Diagrams	
Cuestiones Economicas. Proyectos del Ministerio de Hacienda de la Nacion. 8vo. 1889	The Editor of British Trade Journal
<i>Buenos Ayres—</i>	
Boletin mensual de Estadistica Municipal. 1890. Nos. 1—4. Julio—Octubre. Fol.	The Municipal Statistical Bureau
Boletin trimestral de Estadistica Municipal de la Ciudad de, Segundo trimestre, 1890	
Austria and Hungary—	
Oesterreichische Statistik. Band xxvi. Statistik des auswärtigen Handels, im Jahre 1889. Heft 4. Waaren- Durchfuhr	The Central Statistical Commission
Statistische Monatschrift. August—October, 1890	
<i>Hungary—</i>	
Magyarország Aruforgalma Ausztriával es mas Orszagokkal. (Monthly Trade Returns.) Majus—Julius, 1890	The Royal Hungarian Statistical Bureau
<i>Statistisches Jahrbuch für Ungarn—</i>	
1887. Heft 2, Sanitätswesen, 1887	
1888. Heft 5, Handelsverkehr, 1888. Heft 6, Die Creditinstitute, 1888. Heft 9, Cultus und Unterrichtswesen, 1888	
1889. Landwirthschaft, 1889	
PRAGUE. Bulletin hebdomadaire de la Ville de Prague et des Communes-faubourgs. (Current numbers)	The Statistical Bureau of Prague
Belgium—	
Annales des Travaux Publics de Belgique. Tome xlviii. Cahier 1. 1890	The Administration of Mines
Bulletin de la Commission Centrale de Statistique. Tome xvi. Diagrams, 4to. 1890. (Selection from Contents.) Orthographe des noms des communes: <i>G. Adriaens</i> . Statistique générale de l'instruction publique en Belgique, 1876-85: <i>J. Sauveur</i> . Aperçu de la situation du royaume dressé en Avril, 1889	
Mouvement Commercial avec les Pays Étrangers. Août et Septembre, 1890.....	The Bureau of General Statistics, Ministry of Interior

Donations—Contd.

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ROYAL STATISTICAL SOCIETY.

Founded 15th March, 1834, Incorporated 31st January, 1887.

LIST OF THE FORMER

Patron and Presidents

OF THE SOCIETY.

Patron.

	Period.
HIS ROYAL HIGHNESS THE PRINCE CONSORT, K.G.....	1840-61

Presidents.

The Most Noble the Marquis of Lansdowne, F.R.S.	1834-36
Sir Charles Lemon, Bart., M.P., LL.D., F.R.S.	1836-38
The Right Hon. the Earl Fitzwilliam, F.R.S.	1838-40
The Right Hon. the Viscount Sandon, M.P.	1840-42
(afterwards Earl of Harrowby.)	
The Most Noble the Marquis of Lansdowne, K.G., F.R.S..	1842-43
The Right Hon. the Viscount Ashley, M.P.	1843-45
(afterwards Earl of Shaftesbury.)	
The Right Hon. the Lord Monteagle	1845-47
The Right Hon. the Earl Fitzwilliam, F.R.S.	1847-49
The Right Hon. the Earl of Harrowby	1849-51
The Right Hon. the Lord Overstone	1851-53
The Right Hon. the Earl Fitzwilliam, K.G., F.R.S.	1853-55
The Right Hon. the Earl of Harrowby, K.G., D.C.L.	1855-57
The Right Hon. the Lord Stanley, M.P.	1857-59
(now Earl of Derby.)	
The Right Hon. the Lord John Russell, M.P., F.R.S.	1859-61
(afterwards Earl Russell.)	
The Right Hon. Sir J. S. Pakington, Bart., M.P., G.C.B. ..	1861-63
(afterwards Lord Hampton.)	
Colonel W. H. Sykes, M.P., F.R.S.	1863-65
The Right Hon. the Lord Houghton, D.C.L., F.R.S.	1865-67
The Right Hon. W. E. Gladstone, M.P., D.C.L.	1867-69
W. Newmarch, Esq., F.R.S., Corr. Mem. Inst. of France..	1869-71
William Farr, Esq., M.D., C.B., D.C.L., F.R.S.	1871-73
William A. Guy, Esq., M.B., F.R.S.	1873-75
James Heywood, Esq., M.A., F.R.S., F.G.S.	1875-77
The Right Hon. George Shaw Lefevre, M.P..	1877-79
Thomas Brassey, Esq., M.P.	1879-80
(now the Right Hon. Lord Brassey.)	
The Right Hon. Sir James Caird, K.C.B., F.R.S.	1880-82
Robert Giffen, Esq., LL.D.	1882-84
Sir Rawson W. Rawson, K.C.M.G., C.B.	1884-86
The Right Hon. George Joachim Goschen, M.P., LL.D., F.R.S.	1886-88
T. Graham Balfour, Esq., M.D., F.R.S., F.R.C.P.	1888-90

LIST OF FELLOWS.

*Those marked thus * have compounded for their Annual Subscriptions.*

The names of Members of Council are printed in SMALL CAPITALS.

Year of Election.	
1876	Abrahams, Israel, F.R.G.S., 104, <i>Great Russell-street, W.C.</i>
1888	Ackland, Thomas, G., F.I.A., <i>St. Mildred's House, Poultry E.C.</i>
1888	ACLAND, ARTHUR HERBERT DYKE, M.A., M.P., 35, <i>Cadogan-terrace, S.W.</i>
1862	Acland, Sir Henry Wentworth, Bart., K.C.B., M.D., F.R.S., <i>Oxford.</i>
1869	Aeland, The Rt. Hon. Sir Thomas Dyke, Bart., F.R.G.S., <i>Killerton, Exeter ; and Athenæum Club, S.W.</i>
1879	Adam, Robert (<i>City Chamberlain</i>), <i>City Chambers, Edinburgh.</i>
1867	Addison, John, <i>Colehill Cottage, Fulham Palace-road, S.W.</i>
1890	Adler, Marcus Nathan, M.A., F.I.A., 1, <i>Bartholomew-lane, E.C.</i> , and 22, <i>Craven-hill, W.</i>
1884	Agius, Edward Tancred, 90, <i>Belsize-park-gardens, N.W.</i>
1886	Ainslie, William George, M.P., 23, <i>Abingdon-street, S.W.</i>
1876	Aitchison, William John, 2, <i>Princes-street, E.C.</i>
1885	Aitken, Thomas, 1, <i>West Regent-street, Glasgow.</i>
1879	Akers-Douglas, Aretas, M.P., J.P., <i>Chilston Park, Maidstone, Kent.</i>
1841	Aldam, William, J.P., D.L. <i>Frickley Hall, Doncaster.</i>
1876	Aldwinckle, Thomas Williams, 2, <i>East India-avenue, Leadenhall-street, E.C.</i>
1887	Allard, Alphonse (<i>Directeur de la Monnaie</i>), <i>Brussels, Belgium.</i>
1889	Allen, Frank, J.P., <i>Guildford-terrace, 77, Hill-st., Thorndon, Wellington, N.Z.</i>

Year of Election.	
1876	Allen, John T. R., 13, <i>York-road, Hove, Brighton.</i>
1877	Allen, Joseph, <i>West Riding Chambers, Halifax, Yorkshire.</i>
1871	Anderson, Sir James, F.R.G.S., F.G.S., 50, <i>Old Broad-street, E.C.</i>
1889	Anderson, John Andrew (Alderman), <i>Faversham, Kent.</i>
1886	Andras, Henry Walsingham, F.I.A., 25, <i>Pall Mall, S.W.</i>
1890	*Andrews, Henry, 18, <i>Essex-street, Strand, W.C.</i>
1871	Angus, R. B., <i>Montreal, Canada.</i>
1890	Ann, Alfred E., F.R.G.S., <i>The Oaks, Snaresbrook, Essex.</i>
1884	Anning, Edward James, 78, <i>Cheapside, E.C.</i>
1872	*Archibald, William Frederick A., M.A., 4, <i>Brick-court, Temple, E.C.</i>
1888	Asch, William, 4, <i>Albert Mansions, 118, Victoria-street, S.W.</i>
1883	Aschenheim, Gustav, 27, <i>Mincing-lane, E.C.</i>
1884	Ashwell, Henry, <i>Woodthorpe Grange, Sherwood, Notts.</i>
1888	Atkinson, Charles, <i>Benilton, St. Saviour's-road, Croydon.</i>
1871	Atkinson, George W., 1, <i>Regent-street, Barnsley.</i>
1870	Avery, Thomas, <i>Church-road, Edgbaston, Birmingham.</i>
1872	*Babbage, Major-General Henry Prevost, <i>Mayfield, Lansdown-place, Cheltenham.</i>
1890	Back, Frederick, <i>Launceston, Tasmania.</i>
1872	*Backhouse, Edmund, <i>Bank, Darlington.</i>
1879	Baden-Powell, Sir George, K.C.M.G., M.P., 8, <i>St. George's-place, Hyde Park Corner, S.W.</i>
1855	BAILEY, ARTHUR HUTCHESON, F.I.A., 7, <i>Royal Exchange, E.C.</i>
1890	Bain, William Whyte, 23, <i>Castlereagh-street, Sydney, New South Wales.</i>
1881	Baines, Jervoise Athelstane, C.S., <i>Simla, India.</i>

Year of Election.	
1882	Baker, Captain Daniel, <i>Avenue House, Hagley-road, Edgbaston, Birmingham.</i>
1884	Baker, George, <i>12, Burwood-place, W.</i>
1887	Baker, John, <i>21, Queen Anne's-gate, S.W.</i>
1887	Baldwin, Alfred, J.P., <i>Wilden House, near Stourport.</i>
1878	Balfour, The Right Hon. Arthur James, M.P., LL.D., <i>4, Carlton-gardens, S.W.</i>
1848	Balfour, General Sir George, K.C.B., M.P., D.L., <i>6, Cleveland-gardens, Bayswater, W.</i>
1886	Balfour, Gerald William, M.P., <i>32, Addison-road, Kensington, W.</i>
1873	Balfour, Jabez Spencer, M.P., <i>4, Marlborough-gate, W.</i>
1865	BALFOUR, T. GRAHAM, M.D., F.R.S., F.R.C.P. <i>(Honorary Vice-President),</i>
1886	Ball, Sidney, M.A., <i>St. John's College, Oxford.</i>
1877	Barbour, William Boyle, M.P., <i>Woodlands, Paisley, and Devonshire Club, S.W.</i>
1880	*Baring, Thomas Charles, <i>High Beach, Loughton.</i>
1886	Barker, W. E., B.A.,
1884	Barlow, William Henry, F.R.S., C.E., <i>2, Old Palace-yard, S.W.</i>
1887	Barnes, Joseph Howard, F.I.A., <i>70, Lombard-street, E.C.</i>
1889	Barr, Andrew Wallace, <i>12, Pancras-lane, Queen-street, E.C.</i>
1885	Barratt, Thomas J., <i>75, New Oxford-street, W.</i>
1887	*Barrett, Thomas Squire, F.Z.S., M.A.I., F.R. Hist. Soc., <i>Langley House, Grove-lane, Denmark-hill, S.E.</i>
1883	Barron, Thomas Walter, M.A., M.B., M.R.C.S., &c., <i>10, Old Elvet, Durham.</i>
1888	Barrow, Alfred, <i>Weston-street, Southwark, S.E.</i>
1878	Barry, Francis Tress, M.P., <i>St. Leonard's-hill, Windsor.</i>
1888	*Bartlett, Frederick W., <i>4, Tennison-street, York-road, S.E.</i>
1888	Barton, Ebenezer Johnstone, M.A., <i>East India United Service Club, St. James's-square, S.W.</i>
1889	Bastable, Professor C. F., M.A., <i>74, Kenilworth-square, Rathgar, Co. Dublin.</i>

Year of Election	
1873	Bate, George, 71, <i>Mount Pleasant, Barrow-in-Furness.</i>
1877	BATEMAN, ALFRED EDMUND (<i>Vice-President and Secretary</i>), <i>Board of Trade, Whitehall-gardens, S.W.</i>
1888	Batten, John W., 3, <i>Harcourt Buildings, Temple, E.C.</i>
1877	Bayfield, Arthur, 95, <i>Colmore-row, Birmingham.</i>
1873	*Baynes, Alfred Henry, F.R.G.S., 19, <i>Furnival-street, Holborn, E.C.</i>
1871	*Baynes, William Wilberforce, F.I.A., 32, <i>Moorgate-street, E.C.</i>
1890	Beardmore, George Russell, M.R.C.S., L.R.C.P., <i>Warwick House, Upper-street, Islington-green, N.</i>
1875	*Beardsall, Francis E. M., 25, <i>Booth-street, Manchester.</i>
1878	*Beauchamp, The Right Hon. Earl, 13, <i>Belgrave-square, S.W.</i>
1875	*Beaufort, William Morris, F.R.A.S., F.R.G.S., &c., 18, <i>Piccadilly, W.</i>
1883	Beaumont, Henry,
1882	*Beazeley, Michael Wornum, B.A., 8, <i>St. Paul's-road, Thornton Heath, Surrey.</i>
1883	Beckingham, James Horace, 48, <i>Percy Park, Tynemouth, Northumberland.</i>
1872	*Bedford, His Grace, the Duke of, K.G., D.L.,
1884	Bedford, James, <i>Woodhouse Cliff, Leeds.</i>
1889	Beecroft, William Henry, <i>Guildhall, Westminster, S.W.</i>
1882	*Beeton, Henry Ramie (<i>via, Austin Friars, E.C.</i>); 9, <i>Maresfield-gardens, Hampstead.</i>
1886	Begg, Ferdinand Faithfull, <i>Bartholomew House, E.C.</i>
1890	Bell, Frederick, F.I.A., 9, <i>King-street, Cheapside, E.C.</i>
1880	Bell, Sir Isaac Lowthian, Bart., J.P., F.R.S. <i>Rounton Grange, Northallerton, York, N.R.</i>
1884	Bell, James T., <i>Northcote, Dowanhill, via Glasgow.</i>
1888	Bellew, Thomas Acheson, 65, <i>Tower Buildings, Liverpool.</i>
1890	Bellman, Robert Alexander, 21, <i>Mincing-lane, E.C., and Stoke Newington, N.</i>
1888	*Benson, G. R. (<i>Oxenford Hall, Oxford</i>), 8, <i>Kensington Court Mansions, W.</i>
1884	*Bentley, Richard, F.R.G.S., <i>Upton, Slough, Bucks,</i>

Year of Election.	
1884	Berg, Wilhelm, 37, <i>Mincing-lane, E.C.</i>
1886	Bernard, Henry Fitzgerald, <i>Rosslara, Ealing, W.</i>
1890	Berry, Arthur, M.A., <i>King's College, Cambridge.</i>
1875	Bevan, Thomas, <i>Stone Park, near Dartford, Kent.</i>
1869	*Beverley, Henry, <i>United Service Club, Calcutta.</i>
1879	*Bickford-Smith, William, M.P., J.P., D.L., &c., <i>Trevarno, Helston, Cornwall.</i>
1886	Biggs, Thomas Hesketh, (<i>Comptroller</i>), <i>Rangoon, Burmah.</i>
1888	Billinghurst, Henry F., 41, <i>Lothbury, E.C.</i>
1883	Binney, William, 13, <i>St. Helen's-place, E.C.</i> ; <i>Hillfield, Hampstead, N.W.</i>
1888	Binns, Richard William, F.S.A., <i>Diglis House, Worcester.</i>
1884	Birch, Robert W. Peregrine, M. Inst. C.E., 5, <i>Queen Anne's-gate, Westminster, S.W.</i>
1886	Bird, Stanley, G.,
1890	Bishop, Frederic Sillery, M.A., J.P., <i>Glanrafon, Sketty, Swansea.</i>
1881	Bishop, George, 131, <i>Powis-street, Woolwich.</i>
1883	Blades, R. H., 23, <i>Abchurch-lane, E.C.</i>
1888	Blench, John Urwin, 81, <i>Dale-street, Liverpool.</i>
1884	Boileau, John Peter Hamilton, M.D., &c. (<i>Brigade-Surgeon</i>), <i>Medical Staff, Meerut, Bengal.</i>
1881	Bolitho, Thomas Robins, <i>Pendrea, near Penzance.</i>
1887	Bolling, Francis, 2, <i>Laurence Pountney-hill, E.C.</i>
1890	Bolton, Edward, <i>Clifton Villa, Beverley-road, Hull.</i>
1880	Bolton, Joseph Cheney, M.P., <i>Carbrook, Larnbert, Stirlingshire.</i>
1885	*Bonar, James, M.A., LL.D., <i>Civil Service Commission, Westminster, S.W.</i>
1887	Bond, Edward, <i>Elm Bank, Hampstead, N.W.</i>
1885	BOOTH, CHARLES, 2, <i>Talbot-court, Gracechurch-street, E.C.</i>
1885	Bordman, Emanuel Linden, <i>Victoria House, Trinity-street, Southwark, S.E.</i>

Year of Election.	
1879	Bordman, Thomas Joseph Clarence Linden, LL.D., <i>Victoria House, Trinity-street, Southwark, S.E.</i>
1888	Bottomley, George, <i>Arbourfield House, Derby.</i>
1871	BOURNE, STEPHEN, <i>Abberley, Wallington, Surrey.</i>
1886	Bourne, William, A.I.A., <i>4, Stone-buildings, Lincoln's-inn, W.C.</i>
1885	Bovell, The Hon. Henry Alleyne, LL.B., <i>Chelston, Barbados, West Indies.</i>
1876	Bowen, Horace George, <i>Bank of England, E.C.</i>
1887	Bowles, Captain Henry Ferryman, M.A., M.P., <i>Myddelton House, Waltham Cross, Herts.</i>
1879	Bowley, Edwin, F.I.A., <i>Burnt Ash-hill, Lee, Kent.</i>
1886	Boyle, Courtenay, C.B., <i>Board of Trade, Whitehall-gardens, S.W.</i>
1883	Braby, Frederick, F.C.S., F.G.S., <i>Bushey Lodge, Teddington.</i>
1875	Braby, James, J.P., <i>Maybanks, Rudgwick, Sussex.</i>
1888	Bramwell, Sir Frederick J., Bart., D.C.L., F.R.S., <i>5, Great George-street, Westminster, S.W.</i>
1886	Bramwell, The Right Hon. Lord, F.R.S., <i>17, Cadogan-place, S.W.</i>
1873	BRASSEY, THE RIGHT HON. LORD, K.C.B. (Honorary Vice-President), <i>4, Great George-street, S.W. ; and 24, Park-lane, W.</i>
1864	*Braye, The Right Hon. Lord, <i>Stanford Hall, Rugby.</i>
1884	Breckon, John Robert, <i>41, Fawcett-street, Sunderland.</i>
1883	Briesemann, Francis,
1883	Broad, Harrington Evans, <i>Fonthill, Reigate, Surrey.</i>
1876	Brodhurst, Bernard Edward, F.R.C.S., <i>20, Grosvenor-street, Grosvenor-square, W.</i>
1883	Brooke, C. B., <i>16, Leadenhall-street, E.C.</i>
1874	Broom, Andrew, A.C.A., <i>2, De Crespigny-terrace, Denmark-hill, S.E.</i>
1878	Brown, Alexander Hargreaves, M.P., <i>12, Grosvenor-gardens, S.W.</i>
1890	Browne, Edward William, <i>33, Poultry, E.C.</i>
1875	Browne, Thomas Gillespie C., F.I.A., <i>11, Lombard-street, E.C.</i>

Year of Election.	
1884	Browne, Willis, F.I.A., <i>India Office, Westminster, S.W.</i>
1886	Bruce, Lord Henry Brudenell, M.P., <i>36, Eaton-place, S.W.</i>
1886	*Brunner, John Tomlinson, M.P., <i>Winnington Old Hall, Northwich, Cheshire.</i>
1883	Buck, Sir Edward Charles, <i>Revenue and Agricultural Department, Simla, India.</i>
1865	Bunce, John Thackray, <i>Longworth, Priory-road, Edgbaston, Birmingham.</i>
1880	*Burdett, Henry Charles, <i>The Lodge, Porchester-square, W.</i>
1873	*Burdett-Coutts, The Right Hon. the Baroness, <i>1, Stratton-street, W.; and Holly Lodge, Highgate, N.</i>
1884	Burdett-Coutts, William, M.P., <i>1, Stratton-street, Piccadilly, W.</i>
1882	Burgess, John,
1885	Burridge, Arthur Francis, F.I.A., <i>Equitable Assurance Office, Mansion House-street, E.C.</i>
1886	Burrows, Abraham, J.P., <i>Green Hall, Atherton, near Manchester</i>
1880	Burt, Frederick, F.R.G.S., <i>Woodstock, Crouch End, N.</i>
1872	*Burton, The Right Hon. Lord, <i>Chesterfield House, Mayfair, W; and Rangemore, Burton-on-Trent.</i>
1886	Bush, Baron William de, F.C.S., <i>20, Artillery-lane, Bishopsgate-street, E.C.</i>
1884	Buxton, Sydney Charles, M.P., <i>15, Eaton-place, S.W.</i>
1887	Byrne, Edward Simpson, F.S.A.A., <i>The Treasury, Calcutta.</i>
1888	Byrom, William Ascroft, F.S.A.A., <i>Savings' Bank, Wigan, Lancashire.</i>
1857	CAIRD, THE RIGHT HON. SIR JAMES, K.C.B., F.R.S. <i>(Honorary Vice-President and Trustee), 8, Queen's-gate-gardens, S.W.; & Cassenary, Creetown, N.B.</i>
1874	Campbell, Sir George, K.C.S.I., M.P., D.C.L., <i>17, Southwell-gardens, South Kensington, S.W.</i>
1877	Campbell, George Lamb, <i>Market-street, Wigan.</i>
1879	Campbell-Colquhoun, Rev. John Erskine, <i>Chartwell, Westerham, Kent.</i>

Year of Election.	
1889	Cannan, Edwin, M.A., 24, <i>St. Giles', Oxford.</i>
1887	Capper, Robert, A.I.C.E., F.R.G.S.,
1888	CARBUTT, EDWARD HAMER, M. Inst. M.E., M. Inst. C.E., J.P. 19, <i>Hyde Park-gardens, W.</i>
1881	Carden, Lionel Edward Gresley, <i>H.M. Consul, Mexico.</i>
1872	*Carillon, J. Wilson, F.S.A., F.R.G.S., <i>The Chimes, Richmond, Surrey.</i>
1887	Carmichael, Charles H. E., M.A., <i>Earlsmuir House Mirabel-road, Fulham, S.W.</i>
1885	Carmichael, Thomas D. Gibson, <i>Castlecraig, Dolphinton N.B.</i>
1886	Carpenter, Frederick, 19, <i>Emperor's-gate, South Kensington, S.W.</i>
1888	Carr, Ebenezer, 5, <i>Grocers' Hall-court, Poultry, E.C.</i>
1888	Carruthers-Wain, William J., <i>Linden Lodge, Thornton Heath, Surrey.</i>
1890	Carter, Eric Mackay, A.I.A., F.C.A., 33, <i>Waterloo-street, Birmingham.</i>
1883	Carter, Joseph Robert, 2, <i>Steeles-road, N.W., and 14, King's Arms-yard, E.C.</i>
1878	*Casley, Reginald Kennedy, M.D., <i>Northgate-street, Ipswich.</i>
1885	Casson, William A., 22, <i>Addison-road, Bedford-park, Chiswick.</i>
1880	Castle, Robert, 18, <i>Merton-street, Oxford.</i>
1883	Cater, J. J., 39, <i>Lombard-street, E.C.</i>
1883	Cattarns, Richard, <i>Enfield House, Grove-park, Lee, S.E.</i>
1889	Catton, John Morris, <i>St. George's Club, Hanover-square, W.</i>
1881	Causton, Richard Knight, M.P., 3, <i>Clanricarde-gardens, W.</i>
1858	Chadwick, David, <i>The Poplars, Herne Hill, Dulwich, S.E.</i>
1869	Chadwick, John Oldfield, F.R.G.S., 95, <i>Finsbury-pavement, E.C.</i>
1884	Chailley, Joseph, 9 <i>Rue Guy de la Brosse, Paris.</i>
1888	Challis, William H., <i>Enfield, Middlesex.</i>
1880	*Chamberlain, The Right Honourable Joseph, M.P., F.R.S., 40, <i>Prince's-gardens, S.W.</i>
1886	Chamberlain, Richard, M.P., 39, <i>Cadogan-square, S.W.</i>

Year of Election.	
1886	Chapman, Samuel, <i>Shirley, Chipping Barnet, Herts.</i>
1884	Chater, J., <i>Evelyn Lodge, Comarapore, Asausol, E.I.R., India.</i>
1851	*Cheshire, Edward, <i>3, Vanbrugh Park, Blackheath, S.E.</i>
1883	Childs, Walter,
1853	Chisholm, David, F.I.A., <i>9, Rillbank-terrace, Edinburgh.</i>
1886	*Chisholm, George Goudie, M.A., B.Sc., F.R.G.S., <i>26, Dornton-road, Balham, S.W.</i>
1869	Chubb, Hammond, B.A., <i>Bickley, Kent.</i>
1888	Clapham, W. W., <i>35, Church-street, Manchester.</i>
1849	Clark, Gordon Wyatt, <i>Mickleham Hall, near Dorking, Surrey.</i>
1886	Clark, Henry James (Government Statist of Trinidad). <i>Port of Spain, Trinidad.</i>
1856	Clark, Sir John Forbes, Bart., <i>Tillypronie, Tarland, Aberdeen.</i>
1888	Clarke, Charles Goddard, <i>Ingleside, Elm Grove, Peckham, S.E.</i>
1871	Clarke, Ebenezer, <i>Grove-road-villas, Walthamstow.</i>
1882	*Clarke, Ernest, F.L.S., <i>10, Addison-road, Bedford-park, Chiswick.</i>
1877	*Clarke, Henry, L.R.C.P., <i>H.M. Prison, Wakefield, Yorks.</i>
1890	Clarke, Henry, <i>Cannon Hall, Hampstead, N.W.</i>
1856	*CLARKE, HYDE, <i>32, St. George's-square, S.W.</i>
1869	Cleghorn, John, <i>3, Spring-gardens, S.W.</i>
1850	*Cleveland, His Grace the Duke of, K.G., <i>Battle Abbey, Sussex.</i>
1853	Clirehugh, William Palin, F.I.A., <i>66, Cornhill, E.C.</i>
1888	Clough, Walter Owen, <i>89, Gresham-street, E.C., and The Ridgway, Enfield.</i>
1889	Coate, James, <i>East Villa, Lyme-road, Axminster.</i>
1873	Cockle, Captain George, F.R.G.S., <i>9, Bolton-gardens, South Kensington, S.W.</i>
1884	Cockshott, John James, <i>24, Queen's-road, Southport.</i>
1887	Cohen, Nathaniel Louis, <i>31, Throgmorton-street, E.C.</i>

Year of Election.	
1888	Coleman, Harry, 34, <i>Golden-square, W.</i>
1859	Coles, John, F.I.A., 39, <i>Throgmorton-street, E.C.</i>
1887	Collet, Sir Mark Wilks, Bart., 2, <i>Sussex-square, W., and St. Clere, Sevenoaks, Kent.</i>
1888	Collison, Frederick H., 99, <i>Cheapside, E.C., and Talfourd-road, Camberwell.</i>
1883	Collmann, John S.,
1882	*Collum, Rev. Hugh Robert, M.R.I.A., F.R.C.I., <i>Vicar of Leigh, near Tunbridge, Kent.</i>
1867	Colman, Jeremiah James, M.P., <i>Carrow House, Norwich.</i>
1878	Colomb, Captain Sir J. C. R., K.C.M.G., M.P., R.M.A., J.P., <i>Droumquinna, Kenmare, Kerry.</i>
1884	Colyar, Henry Anselm De, 24, <i>Palace-gardens-terrace, W.; Athenæum Club, S.W.</i>
1889	Compton, The Right Hon. Earl, M.P., 51, <i>Lennox-gardens, S.W.</i>
1888	Connell, Arthur Knatchbull, M.A., 20, <i>Elmtree-road, N.W.</i>
1887	Cooke-Taylor, R. Whately, <i>Frenchwood House, Preston.</i>
1874	Corbett, John, M.P., 20, <i>Hertford-street, Mayfair, W.</i>
1883	Corgialegno, M., <i>George-yard, Lombard-street, E.C.</i>
1873	Cork, Nathaniel, F.R.G.S., 18, <i>Birchin-lane, E.C.</i>
1889	Cornwallis, Fiennes Stanley Wykeham, M.P., <i>Linton-park, Maidstone, Kent.</i>
1880	Cotterell-Tupp, Alfred, 17, <i>Devonshire-terrace, Hyde-park, W.</i>
1890	Cotton, F. Carter, <i>Vancouver, British Columbia.</i>
1862	Courtney, The Right Hon. Leonard Henry, M.A., M.P., 15, <i>Cheyne Walk, Chelsea, S.W.</i>
1882	Cowen, Charles, <i>Johannesburg, Transvaal, South Africa.</i>
1888	Craggs, John George, C.A., 19a, <i>Coleman-street, E.C.</i>
1874	CRAIGIE, MAJOR PATRICK GEORGE (<i>Secretary</i>), 6, <i>Lyndhurst-road, Hampstead, N.W.</i>
1870	Craik, George Lillie, 29, <i>Bedford-street, Strand, W.C.</i>
1889	Cramp, Charles Courtney, C.E., 28, <i>Boscombe-road, Uxbridge-road, W.</i>
1890	Crawford, Richard Frederick, <i>Temple Chambers, Temple Avenue, E.C.</i>

Year of Election.	
1878	Crewdson, Ernest, <i>Platt Abbey, Rusholme, Manchester.</i>
1886	Crispin, Edward, <i>Queen Insurance Company, Buenos Ayres.</i>
1890	Croal, David Octavius, <i>15, York-buildings, Adelphi, W.C.</i>
1880	*Crompton-Roberts, Charles Henry, <i>16, Belgrave-square, S.W.</i>
1885	Cropper, James, <i>Ellergreen, Kendal.</i>
1888	Crosse, Rev. Edmond Francis, <i>St. Thomas, Bedford-Leigh, Lancashire.</i>
1883	Cullen, Thomas, F.C.A.
1887	Culley, George, <i>2, Whitehall-place, S.W.</i>
1875	Cunningham, David, C.E., <i>Works' Office, Harbour-chambers, Dundee.</i>
1883	CUNNINGHAM, REV. WILLIAM, M.A., D.D., <i>2, St. Paul's-road, Cambridge.</i>
1884	Curtis, Charles Edward, <i>6, Barron's Court-road, West Kensington, S.W.</i>
1879	Curtis, Robert Leabon, F.S.I., J.P., <i>120, London Wall, E.C.</i>
1873	Czarnikow, Cæsar, <i>Effingham-hill, Dorking, Surrey.</i>
1886	Dale, David, <i>West Lodge, Darlington.</i>
1888	Dangerfield, Athelstan, A.C.A., <i>17, Basinghall-street, E.C.</i>
1884	Daniell, Clarmont J., <i>Carshalton, Surrey.</i>
1880	Danvers, Frederick Charles, <i>India Office, Westminster, S.W.</i>
1873	Danvers, Sir Juland, K.C.S.I., <i>India Office, Westminster, S.W.</i>
1886	Darrell, Charles, <i>Sidcup, Kent.</i>
1890	Davey, Robert Williams, B.A., <i>7, Mincing-lane, E.C., and Junior Athenæum Club, S.W.</i>
1869	Davies, James Mair, <i>75, West Regent-street, Glasgow.</i>

Year of Election.	
1874	Davies, William Henry, 51, <i>Tregunter-road, West Brompton, S.W.</i>
1890	Dawson, A. L. Halkett, M.A., F.R.G.S., <i>Grand Hotel, Melbourne, Victoria.</i>
1888	Dawson, G. J. Crosbie, M. Inst. C.E., F.G.S. (Engineer), <i>North Staffordshire Railway, Stoke-upon-Trent.</i>
1886	Dawson, J. Eugène, <i>Walpole House, Walpole-street, Freetown, Sierra Leone.</i>
1880	Debenham, Frank, 26, <i>Upper Hamilton-terrace, St. John's Wood, N.W.</i>
1885	De Broë, Emile Conrad De Bichin, <i>Walden Lodge, College Park, Wandsworth-common, S.W.</i>
1879	*De Ferrieres, The Baron Du Bois, J.P., <i>Bay's-hill House, Cheltenham.</i>
1884	De Jouy, J. Henry B., 27, <i>Rue de l'Université, Paris.</i>
1883	*De Keyser, Sir Polydore (Alderman), <i>Chatham House, Grove-road, Clapham Park, S.W.</i>
1877	Deloitte, William Welch, 4, <i>Lothbury, E.C.</i>
1886	Denman, Arthur Lemoine, 110, <i>Cambridge-gardens, North Kensington, W.</i>
1873	Dent, Edward, <i>Fernacres, Fulmer, near Slough, Bucks.</i>
1887	Dent, George Middlewood, 13, <i>Chambres-road, Southport.</i>
1855	*DERBY, THE RIGHT HON. THE EARL OF, K.G., F.R.S., D.C.L. (<i>Honorary Vice-President</i>), <i>St. James's-square, S.W.; Knowsley, Prescott, Lancashire.</i>
1887	De Ricci, James Herman, F.R.G.S., <i>Hampton Court.</i>
1889	De Rothschild, Leopold, J.P., D.L. (Alderman), 5, <i>Hamilton-place, Piccadilly, W.</i>
1889	De Souza, Sir Walter Eugene, 35, <i>Albert Hall Mansions, S.W.</i>
1884	Dethridge, J. Frank, <i>The Hermitage, Ravenscourt-park, W.</i>
1877	Dever, Henry, 4, <i>Lothbury, E.C.</i>
1885	Devonshire, Thomas Harris,
1889	De Woolfson, Louis Estevan Green, <i>St. John's-hill, Shrewsbury.</i>
1877	De Worms, The Right Hon. Baron Henry, M.P., F.R.A.S., <i>Carlton Club, Pall Mall, S.W.</i>
1885	Dibley, Captain George, 4, <i>St. George's-square, S.W.</i>
1890	Dickinson, Willoughby Hyett, <i>Bramblebury, Wandsworth-common, S.W.</i>

- | Year of
Election. | |
|----------------------|---|
| 1866 | *Dilke, The Right Hon. Sir Charles Wentworth, Bart., LL.M.,
76, <i>Sloane-street, S.W.</i> |
| 1873 | Dixon, George, M.P.,
<i>The Dales, Edgbaston, Birmingham.</i> |
| 1889 | Double, Alfred,
25, <i>Jewin-crescent, Cripplegate, E.C.</i> |
| 1889 | Doubleday, William Bennett,
123, <i>Tulse-hill, S.W.</i> |
| 1889 | Douglas, J.,
<i>E.I. Railway House, Dalhousie Square, Calcutta.</i> |
| 1875 | Doxsey, Rev. Isaac,
186, <i>The Grove, Camberwell, S.E.</i> |
| 1878 | Doyle, Patrick, C. E., F.G.S., M.R.A.S.,
<i>Messrs. Apcar and Co's. Collieries, Sectarampore, India.</i> |
| 1890 | Drummond, Charles James,
3, <i>Raquet-court, Fleet-street, E.C.</i> |
| 1875 | Dun, John,
<i>Parr's Banking Company Limited, Warrington.</i> |
| 1870 | Duncan, James,
9, <i>Mincing-lane, E.C.</i> |
| 1886 | Dundonald, the Right Hon. the Earl of,
34, <i>Portman-square, W.</i> |
| 1884 | Dunn, Archibald Joseph,
23, <i>Applegarth-road, Brook-green, Hammersmith, W.</i> |
| 1878 | *Dunraven, The Right Hon. The Earl of, K.P.,
<i>Kenry House, Putney Vale, S.W.</i> |
| 1885 | Dyer, William John,
17, <i>Montpelier-row, Blackheath, S.E.</i> |
| 1888 | Earnshaw, Jacob,
10, <i>St. James's-square, Manchester.</i> |
| 1888 | Eckersley, J. C., M.A., F.R.G.S.,
<i>Standish Hall, Wigan; 20, Davies-street, Berkeley-square.</i> |
| 1883 | EDGEWORTH, PROFESSOR F. Y., M.A., D.C.L. (Vice-President),
5, <i>Mount Vernon, Hampstead, N.W.</i> |
| 1869 | Edmonds, William,
<i>Annesley House, Southsea.</i> |
| 1880 | Egerton of Tatton, The Right Honourable Lord,
7, <i>St. James's-square, S.W.</i> |
| 1872 | Elliot, Sir George, Bart., M.P.,
<i>Park-street, Park-lane, W.; 22, Gt. George-street, S.W.</i> |
| 1885 | Elliot, William Henry,
122, <i>Mansion House-chambers, Queen Victoria-street, E.C.</i> |

Year of Election.	
1888	Elliott, Henry W., <i>Elmfield, Selly Oak, near Birmingham.</i>
1885	ELLIOTT, THOMAS HENRY, <i>Local Government Board, Whitehall, S.W.</i>
1885	Elliott, William, <i>10a, Wale-street, Cape Town.</i>
1873	Emanuel, Lewis, <i>91, Gloucester-terrace, Hyde-park, W.</i>
1877	Emmott, W. T., <i>New Bridge-street, Manchester.</i>
1888	Emson, Reginald Embleton, <i>Hazelmere, Glen Eldon-road, Streatham, S.W.</i>
1889	Erhardt, William, <i>7, Bury-street, Bloomsbury, W.C.</i>
1882	Essex, Benjamin Smily, <i>48, Pall Mall, S.W.</i>
1879	Evans, Henry Jones, J.P., <i>Brecon Old Bank, Cardiff.</i>
1890	Evill, John Percy, <i>32, Abingdon-villas, Kensington, W.</i>
1875	Faraday, Frederick J., <i>17, Brazennose-street, Manchester.</i>
1888	Farlow, A. R. King, <i>4, King-street, Cheapside, E.C.</i>
1889	Farnworth, Edward James, <i>20, Cannon-street, Preston.</i>
1868	Farrell, John Douglas,
1878	Farren George, J.P., A.M.Inst.C.E., <i>Carnarvon.</i>
1878	Farrer, Sir Thomas Henry, Bart., J.P., <i>27, Bryanston-square, W.; Abinger Hall, Dorking.</i>
1890	Faulks, Joseph Ernest, B.A., F.I.A., <i>187, Fleet-street, E.C.</i>
1876	Fearnside, Henry, M.B., F.R.C.P., <i>De Vere Mansions West, 34, De Vere-gardens, W.</i>
1882	Fell, Arthur, M.A., <i>46, Queen Victoria-street, E.C.</i>
1864	Fellows, Frank Perks, <i>8, The Green, Hampstead, N.W.</i>

Year of
Election.

- 1838 Fellows, James I.,
Saxon Hall, Palace-court, Kensington Gardens, W.
- 1887 Fenton, James J.,
Office of the Government Statist, Melbourne, Victoria.
- 1885 Ferguson, Ronald Crawford Munro, M.P.,
Raith, Kirkcaldy, N.B.
- 1888 Finckenstadt, Edmund Ernest,
6, King-street, Cheapside, E.C.
- 1880 Findlay, George, (General Manager),
London and N. Western Railway, Euston Station, N.W.
- 1880 Finlaison, Alexander John, C.B., F.I.A.,
19, Old Jewry, E.C.
- 1889 *Finlay, Major Alexander,
The Manor House, Little Brickhill, Bletchley, Bucks.
- 1884 *Finnemore, Robert Isaac, J.P., F.R.G.S., &c.,
Durban, Natal, South Africa
- 1888 Fisher, Walter Newton, F.C.A.,
4, Waterloo-street, Birmingham.
- 1885 *Fitz-Gerald, Major William George, M.A.,
United Service Club, Dublin.
- 1882 Foley, Patrick James, M.P.,
Pearl Ins. Co., Adelaide-place, London Bridge, E.C.
- 1889 Foot, Alfred,
Bedford-villas, Penge-road, South Norwood.
- 1886 Ford, Alfred,
90, Cannon-street, E.C.
- 1841 Fortescue, The Right Honourable Earl,
Castle Hill, South Molton, Devon.
- 1888 Forwood, Sir William B., J.P.,
Blundell Sands, Liverpool.
- 1884 Fosbery, William Thomas Exham,
The Castle-park, Warwick.
- 1888 Foster, Harry Seymour, F.R.G.S.,
City Carlton Club, St. Swithin's-lane, E.C.
- 1877 *Fowler, Sir Robert Nicholas, Bart., M.P. (Alderman),
Elm Grove, Corsham, Wilts.
- 1868 Fowler, William,
43, Grosvenor-square, W.
- 1890 Fox, Charles Allen, M.R.C.S.,
Ashfield, Ross, Herefordshire.
- 1888 Fox, William Henry,
9, Austin Friars, E.C.
- 1878 FOXWELL, PROFESSOR H. SOMERTON, M.A.,
St. John's College, Cambridge.
- 1888 Frampton, Albert Tom,
Clovelly, Walton-on-Thames, Surrey.
- 1887 Frankland, Frederick William, F.I.A.
Govt. Life Ins. Office, Wellington, New Zealand.
- 1886 Fream, Professor William, B.Sc., Lond., LL.D., F.L.S., F.G.S.,
College of Agriculture, Downton, Salisbury.

Year of Election.	
1844	*Freeland, Humphrey William, J.P., <i>Athenæum Club, S.W.; and Chichester.</i>
1887	Freeman, T., jun., F.G.S., <i>52, Weltje-road, Ravenscourt-park, W.</i>
1890	Freestone, John, <i>West Bridgford, Nottingham.</i>
1884	Frith, Walter Halsted, <i>69, Lombard-street, E.C.</i>
1886	Fuller, George Pargiter, M.P., <i>Neston-park, Corsham, Wilts.</i>
1878	Fuller, William Palmer, <i>50, Gresham-street, E.C.</i>
1879	Gairdner, Charles, <i>Broom, Newton Mearns, Renfrewshire.</i>
1852	Galsworthy, Sir Edwin Henry, J.P., <i>18, Park-crescent, Portland-place, W.</i>
1873	*Galton, Capt. Sir Douglas, K.C.B., D.C.L., LL.D., F.R.S., <i>12, Chester-street, Grosvenor-place, S.W.</i>
1860	Galton, Francis, F.R.S., F.R.G.S., <i>42, Rutland-gate, S.W.</i>
1887	Garcke, Emile, <i>21, Priory-road, Bedford-park, Chiswick.</i>
1890	Gardner, Ernest, <i>Spencers, Maidenhead.</i>
1889	Garland, Nicholas Surrey, <i>Finance Department, Ottawa, Canada.</i>
1881	GARNETT, FREDERICK BROOKSBANK, C.B., <i>4, Argyll-road, Kensington, W.</i>
1881	Garraway, The Hon. David G., <i>Castries, St. Lucia, West Indies.</i>
1879	*Gassiot, John Peter, J.P., <i>The Culvers, Carshalton, Surrey,</i>
1883	Gates, Jacob S., <i>St. George's House, Eastcheap, E.C.</i>
1880	*Gates, John Benjamin, jun., A.C.A., <i>47, Warwick-street, Regent-street, W.</i>
1881	*Gatty, William Henry, <i>Market Harborough, Leicestershire.</i>
1885	Gibb, George S., <i>North-Eastern Railway Company, York</i>
1872	Gibb, Thomas Eccleston, <i>16, Lady Margaret-road, N.W.</i>

Year of Election.	
1874	Gibbs, Alban George Henry, 82, <i>Portland-place, W.</i>
1871	Gibbs, George Sleight, <i>Elton House, Darlington.</i>
1889	Gibson, George Rutledge, 7, <i>West 51st-street, New York City, U.S.A.</i>
1888	Gibson, Thomas Eli, <i>High-street, Crewe.</i>
1888	Gielgud, Henry, 19, <i>The Avenue, Bedford-park, Chiswick.</i>
1867	*GIFFEN, ROBERT, LL.D. (<i>Honorary Vice-President</i>), 44, <i>Pembroke-road, Kensington, W.</i>
1877	Gilbert, William H. Sainsbury, 62, <i>Old Broad-street, E.C.</i>
1878	*Glanville, Silvanus Goring, 39, <i>Vicar's-hill, Lewisham, S.E.</i>
1860	Glover, John, J.P., 88, <i>Bishopsgate-street Within, E.C.</i>
1888	Goad, Charles E., M. Am. Soc. C.E., M. Can. Soc. C.E., 53, <i>New Broad-street, E.C., and Montreal, Canada.</i>
1877	Goddard, Frederick Robertson, 19, <i>Victoria-square, Newcastle-on-Tyne.</i>
1884	*Gonner, Professor Edward C.K., M.A., <i>University College, Liverpool.</i>
1877	Good, Alfred, 57, <i>Moorgate-st., E.C.; Downe Lodge, Beckenham, Kent.</i>
1886	Goodrich, Harry St. Aubyn (<i>Calcutta</i>), <i>c/o Messrs. H. S. King and Co., 65, Cornhill, E.C.</i>
1885	Goodsall, David Henry, F.R.C.S., 17, <i>Devonshire-place, W.</i>
1868	GOSCHEN, THE RIGHT HON. GEORGE JOACHIM, M.P., (<i>Honorary Vice-President</i>), 69, <i>Portland-place, W., and Seacox-heath, Hawkhurst.</i>
1855	*Gosset, John Jackson, <i>Thames Ditton, Surrey.</i>
1885	Goulding, William Purdham, F.S.I., 41, <i>Moorgate-street, E.C.; and 18, Mercers-road, N.</i>
1887	Gover, Frederic Field, <i>Casino House, Herne Hill, S.E.</i>
1853	Gover, William Sutton, F.I.A., 4, <i>Queen-street-place, Southwark Bridge, E.C.</i>
1885	Grant, Thomas Rennie, 10, <i>Harrington-gardens, Kensington, S.W.</i>
1875	Granville, Joseph Mortimer, M.D., F.G.S., 14, <i>Hanover-square, W.</i>
1887	Graves, The Rev. Michael, B.A., <i>Sir W. Borlase's School, Great Marlow.</i>
1847	Gray, Thomas, 34, <i>Fenchurch-street, E.C.</i>

Year of Election.	
1888	Green, Joseph Shaw, 18, <i>King Street, Warrington.</i>
1886	Green, Oswald R., 7, <i>Finsbury-square, E.C.</i>
1889	Grenfell, William Henry, B.A., J.P., D.L. (Alderman), <i>Taplow-court, Taplow, Bucks.</i>
1887	Gribble, George J., 25, <i>Hans-place, S.W.</i>
1883	Griffin, Josiah, <i>Vanbrugh Park, Blackheath, S.E.</i>
1868	Griffith, Edward Clifton, 1, <i>Waterloo-place, S.W.</i>
1884	Griffith, His Honour T. Risely, <i>Government House, Mahé, Seychelles, viâ Marseilles.</i>
1889	Grigsby, William Ebenezer, M.A., LL.D., 7, <i>King's Bench Walk, Temple, E.C.</i>
1883	Grimshaw, Thomas Wrigley, M.D., M.A., (<i>Registrar-General of Ireland</i>), <i>Priorsland, Carrickmines, Co. Dublin.</i>
1886	Grimston, The Right Hon. Viscount, M.P., <i>Cell Barnes, St. Albans.</i>
1889	Grosvenor, George, <i>Holywell, Streatham-common, S.W.</i>
1888	Grosvenor, The Hon. Norman de l'Aigle, 58, <i>Green-st., Grosvenor-sq.; Moor-park, Rickmansworth.</i>
1883	Gunther, Charles, 9, <i>Fenchurch-avenue, E.C.</i>
1875	Gunn, Arthur, 31, <i>Gloucester-road, Gloucester-gate, Regent's-park, N.W.</i>
1878	Guthrie, Charles, F.C.A. <i>London Chartered Bank of Australia, Melbourne, Victoria.</i>
1885	Guthrie, Edwin, <i>Victoria Park, Manchester.</i>
1887	Guyot, His Excellency Yves (<i>Deputé</i>), 244, <i>Boulevard St. Germain, Paris.</i>
1888	Gwilliam, Rev. S. Thorn, B.A., F.R.G.S., <i>Notcliffe House, Tewkesbury.</i>
1880	*Gwynne, James Eglinton A., J.P., F.S.A., 97, <i>Harley-st., W.; Folkington Manor, Polegate, Sussex.</i>
1887	Gwyther, John Howard, <i>Hatton-court, Threadneedle-street, E.C.</i>

Year of Election.	
1884	Haas, Hendrik Christiaan, 32, <i>Fenchurch-street, E.C.</i>
1888	Haddon, John, 3, <i>Bouverie-street, Fleet-street, E.C.</i>
1884	Hadley, Joseph, 5, <i>Argyll-place, Regent-street, W.</i>
1883	Hadrill, Henry John, 1, <i>Foley-avenue, East Heath, Hampstead, N.W.</i>
1873	*Haggard, Frederick T., 1, <i>Broadwater Down, Tunbridge Wells.</i>
1884	Hague, John, <i>King-street, Toronto, Canada.</i>
1887	Haldeman, Donald Carmichael, <i>Claremont, Gypsy Hill, S.E.</i>
1883	Hall, Sir John, K.C.M.G., <i>Hororata, Canterbury, New Zealand.</i>
1890	Hall, Joseph Castle, 89, <i>Gresham-street, E.C.</i>
1878	Hallett, Thomas George Palmer, M.A., <i>Claverton Lodge, Bath.</i>
1887	Hamilton, Edward W., C.B., <i>The Treasury, Whitehall, S.W.</i>
1873	Hamilton, The Right Hon. Lord George Francis, M.P., 17, <i>Montagu-street, Portman-square, W.</i>
1883	Hamilton, James Thomas, 23, <i>High-street, Southampton.</i>
1882	Hamilton, John James, 7, <i>Barkston-gardens, Earl's-court, S.W.</i>
1879	HAMILTON, ROWLAND, <i>Oriental Club, Hanover-square, W.</i>
1887	Hamilton, Thomas, J.P., 46, <i>Parliament-hill-road, Hampstead, N.W.</i>
1884	*Hammersley, Hugh Greenwood, 14, <i>Chester-square, S.W.</i>
1888	Hammond, Robert, 117, <i>Bishopsgate-street Within, E.C.</i>
1885	*Hancock, Charles, M.A., Oxon., 2, <i>Cloisters, Temple, E.C.; and Reform Club, S.W.</i>
1869	Hancock, William, 35, <i>Cornhill, E.C.</i>
1875	Hankey, Ernest Alers, <i>Elmhurst, Bickley-park, Kent.</i>
1879	Hankey, Thomson, 59, <i>Portland-place, W.</i>
1876	Hansard, Luke, 68, <i>Lombard-street, E.C.</i>
1883	Hansell, Robert B.,
1871	*Harcourt, Right Hon. Sir William Vernon, Q.C., M.P., F.R.S. <i>Reform Club, S.W.</i>

Year of Election.	
1886	*Hardcastle, Basil William, <i>Beechenden, Hampstead, N.W.</i>
1886	Hardcastle, E. J., <i>Oriental Club, Hanover-square, W.</i>
1877	Harding, Colonel Charles, F.R.G.S., <i>10, St. Swithin's-lane, E.C.</i>
1883	Harding G. P., <i>La Chaumière, Trouville, S./M. France.</i>
1884	Hardy, George Francis, F.I.A., <i>5, Whitehall, S.W.</i>
1883	Hardy, William Henry, F.C.A., <i>5, Great Winchester-street, E.C.</i>
1868	Harris, David, <i>Caroline Park, Granton, Edinburgh.</i>
1887	Harris, William A., F.R.S.S.A., <i>Phoenix Chambers, Exchange, Liverpool.</i>
1882	Harris, William James, <i>Halwill Manor, Beaworthy, N. Devon.</i>
1890	Harrison, Rev. Arthur, B.A., F.R.S.L. <i>Colan Vicarage, St. Columb, Cornwall.</i>
1889	Harrold, Major Arthur Lucas, <i>Adelaide, South Australia.</i>
1887	Harrold, Leonard F., F.R.G.S., <i>29, Great St. Helens, E.C.</i>
1884	Hart, James, <i>16, Philpot-lane, E.C.</i>
1884	Hartel, Adolph,
1881.	Harvey, Alfred Spalding, B.A., <i>67, Lombard-street, E.C.</i>
1884	Harvey, Thomas Morgan, <i>1, Gresham Buildings, Basinghall-street, E.C.</i>
1876	Hawkins, Alfred Templeton, F.R.G.S., <i>22, Budge-row, Cannon-street, E.C.</i>
1879	Hawksley, Thomas, C.E., F.R.S., &c., <i>30, Great George-street, Westminster, S.W.</i>
1880	Hazell, Walter, <i>15, Russell-square, W.</i>
1887	*Heap, Ralph, jun., <i>1, Brick-court, Temple, E.C.</i>
1884	Hedley, Robert Wilkin, <i>31a, Colmore-row, Birmingham.</i>
1870	Hefford, George V., <i>Rugby.</i>
1883	Heilgers, Robert Phillip, <i>22, Great St. Helens, E.C.</i>
1889	*Hemming, Arthur George, F.I.A., <i>2, Earl's Court-square, South Kensington, S.W.</i>
1865	Hendriks, Augustus, F.I.A., <i>7, Cornhill, E.C.</i>

Year of Election.	
1855	* HENDRIKS, FREDERICK, F.I.A. (1, <i>King William-street, E.C.</i>), 7, <i>Vicarage-gate, Kensington, W.</i>
1886	Henshaw, Richard S., 31, <i>Bedford-street, Strand, W.C.</i>
1877	*Herbage, William, <i>London & South Western Bank, 7, Fenchurch-street, E.C.</i>
1888	Heriot, George, 1, <i>Whittington House, Leadenhall-street, E.C.</i>
1881	Hewat, Archibald, F.I.A., F.F.A., 22, <i>George-street, Edinburgh.</i>
1890	Hewins, W. A. S., B.A., <i>Pembroke College, Oxford.</i>
1834	*HEYWOOD, JAMES, M.A., F.R.S., F.G.S (<i>Honorary Vice-President and Trustee</i>), 26, <i>Palace-gardens, Kensington, W.</i> ; <i>Athenæum Club, S.W.</i>
1886	Hibbert, H. F., 8, <i>Park-road, Chorley, Lancashire.</i>
1869	Hickson, Sir Joseph, J.P. (<i>General Manager</i>), <i>Grand Trunk Railway, Montreal, Canada.</i>
1878	*Hill, Frederick Morley, 22, <i>Richmond-road, Barnsbury, N.</i>
1878	Hillingdon, The Right Hon. Lord, <i>Camelford House Park-lane, W.</i>
1890	Hinde, Frederick, 63, <i>Leopold-street, Leeds.</i>
1884	Hoare, Alfred, 37, <i>Fleet-street, E.C.</i>
1879	Hoare, H. N. Hamilton, 37, <i>Fleet-street, E.C.</i>
1870	*Hoare, Henry, 22, <i>Bryanston-square, W.</i>
1889	Hogg, Quintin (Alderman), 5, <i>Cavendish-square, W.</i>
1888	Hollams, John, 52, <i>Eaton-square, S.W.</i>
1888	Hollington, Alfred J., <i>Aldgate, London, E.</i>
1884	Holland, John Robert, 1, <i>Upper Berkeley-street, Portman-square, W.</i>
1887	Honeyman, Archibald Pearson, 128, <i>Colmore-row, Birmingham.</i>
1879	Hooper, George Norgate, <i>Elmleigh, Hayne-road, Beckenham, Kent.</i>
1889	Hooper, Pelly, <i>Highclere, Weymouth.</i>
1878	Hooper, Wynnard, 13, <i>Sumner-place, Onslow-square, S.W.</i>
1887	Hopkins, John, <i>Hayes Court, Hayes, Kent.</i>

Year of
Election

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| 1890 | Howarth, William, F.R. Hist. S.,
102, <i>Malpas-road, Brockley, S.E.</i> |
| 1888 | Howell, Edward J.
<i>Kingston House, Caterham Valley, Surrey.</i> |
| 1883 | Howell, Francis Buller,
2, <i>Middle Temple-lane, E.C.</i> |
| 1883 | Howell, George, M.P.,
<i>Hampden House, Ellingham-road, Shepherd's Bush, W.</i> |
| 1864 | Hudson, Thomas,
22, <i>Sudbourne-road, Brixton-hill, S.W.</i> |
| 1878 | Hughes, John,
3, <i>West-street, Finsbury-circus, E.C.</i> |
| 1872 | Humphreys, George, M.A., F.I.A.,
79, <i>Pall Mall, S.W.</i> |
| 1874 | Humphreys, Noel Algernon,
<i>General Register Office, Somerset House, W.C.</i> |
| 1883 | Hunt, Richard Aldington, A.I.A.,
<i>Moor-street, Birmingham.</i> |
| 1888 | Hunter, George Burton,
<i>Wallsend-on-Tyne.</i> |
| 1885 | Hunter, William Alfred, LL.D., M.P.,
2, <i>Brick-court, Temple, E.C.</i> |
| 1857 | Hurst, George,
<i>King's Brook House, St. Mary's, Bedford.</i> |
| 1890 | Huth, Ferdinand M.,
12, <i>Tokenhouse-yard, E.C.</i> |
| 1888 | Hyde, Clarendon G., B.L.,
4, <i>Pump-court, Temple, E.C.</i> |
| 1887 | Hyde, Henry Barry,
5, <i>Eaton-rise, Ealing, W.</i> |
| 1874 | *Ingall, William Thomas Fitzherbert Mackenzie,
6, <i>Drapers'-gardens, E.C.</i> |
| 1886 | Ingham, Edward, |
| 1869 | *Inglis, Cornelius, M.D.,
<i>Athenæum Club, S.W.</i> |
| 1888 | *Ionides, Alexander A.,
1, <i>Holland Park, W.</i> |
| 1888 | Ironmonger, Thomas, J.P.,
<i>Hillside, Graiseley, Wolverhampton.</i> |
| 1887 | Irvine, Somerset William D'Arcy,
<i>Gort. Life Ins. Office, Wellington, New Zealand.</i> |

Year of Election	
1839	Irving, John, 94, <i>Eaton-place, S.W.</i>
1864	*Ivey, George Pearse, <i>South Villa, Bexley-heath, Kent.</i>
1885	Jackson, Henry, 158, <i>The Common, Peckham Rye, S.E.</i>
1880	*Jackson, The Right Hon. William Lavies, M.P., <i>Chapelallerton, Leeds.</i>
1879	Jamieson, George Auldjo, 37, <i>Drumsheugh-gardens, Edinburgh.</i>
1872	JANSON, FREDERICK HALSEY, F.L.S., 41, <i>Finsbury-circus, E.C.</i> ; 60, <i>Westbourne-terrace, W.</i>
1878	JEANS, J. STEPHEN, <i>Victoria Mansions, Victoria-street, Westminster, S.W.</i>
1890	Jepson, John, 41, <i>Warlock-road, St. Peter's-park, W.</i>
1881	*Jersey, The Right Hon. the Earl of, P.C., 3, <i>Great Stanhope-street, W.</i>
1881	Johnson, Edwin Eltham, 110, <i>Cannon-street, E.C.</i>
1871	Johnson, Edmund, 1, <i>Furnival-street, Holborn, E.C.</i>
1888	Johnson, John Grove, 23, <i>Cross-street, Finsbury, E.C.</i>
1880	Johnson, Walter, <i>Rounton Grange, Northallerton.</i>
1872	Johnston, Francis John, <i>Lamas, Chislehurst.</i>
1883	Johnston, Thomas, <i>Broomsleigh-park, Seal, Sevenoaks.</i>
1878	Johnstone, Edward, 14, <i>Abbeville-road, Cavendish-road, Clapham, S.W.</i>
1884	*Jones, Edwin, J. P., 141, <i>Cannon-street, E.C.</i>
1878	Jones, Henry R. Bence, <i>Board of Trade, Whitehall-gardens, S.W.</i>
1874	Jones, Herbert, 15, <i>Montpelier-row, Blackheath, S.E.</i>
1888	Jones, J. Mortimer, 112, <i>Highbury New-park, N.</i>
1887	Jones, John Walter, 58, <i>Cheapside, E.C.</i>

Year of Election.	
1887	Jones, Lewis Davies,
1880	Jones, Robert Heskeith,
1877	Jones, Theodore Brooke, 70, <i>Gracechurch-street, E.C.</i>
1888	*Jordan, William L., 25, <i>Jermyn-street, S.W.</i>
1884	Josolyne, John Augustus,
1858	Jourdan, Francis, <i>Avenue House, Hampstead, N.W.</i>
1890	Joyner, Robert Batson, <i>Haidarabad, Sindh, India.</i>
1889	Justican, Edwin, F.I.A., <i>St. Mildred's House, Poultry, E.C.</i>
1873	Kay, Duncan James, <i>Drumpark, Dumfries, N.B.</i>
1877	Kealy, James William, 26, <i>Moorgate-street, E.C.</i>
1885	Keen, William Brock, 3, <i>Church-court, Old Jewry, E.C.</i>
1874	Kelly, Charles, M.D., F.R.C.P., <i>Worthing, Sussex.</i>
1884	Kelly, Edward Festus, 51, <i>Great Queen-street, Lincoln's-inn-fields, W.C.</i>
1867	Kelly, Edward Robert, A.M., 51, <i>Great Queen-street, Lincoln's-inn-fields, W.C.</i>
1883	Keltie, John Scott, 52, <i>Cromwell-avenue, Highgate, N.</i>
1884	Kemp, John, 46, <i>Cannon-street, E.C.</i>
1889	Kempson, William (Alderman), <i>Leicester.</i>
1884	*KENNEDY, CHARLES MALCOLM, C.B., <i>Foreign Office, Downing-street, S.W.</i>
1886	Kennedy, John Gordon, <i>Santiago, Chile.</i>
1878	Kennedy, J. Murray, <i>New University Club, St. James's-street, S.W.</i>
1878	Kennedy, Thomas, F.C.A. 11, <i>Old Jewry-chambers, E.C.</i>

Year of Election.	
1881	*KENNETT-BARRINGTON, Sir V. HUNTER, M.A., LL.M., Cantab., 65, <i>Albert Hall Mansions, S.W.</i>
1883	*Keynes, John Neville, M.A., B.Sc. 6, <i>Harvey-road, Cambridge.</i>
1887	Kidd, Benjamin, <i>Inland Revenue Office, Somerset House, W.C.</i>
1890	Killik, Stephen H. M., 30, <i>Winchester House E.C.</i>
1884	Kimber, Henry, M.P., 79, <i>Lombard-street, E.C.</i>
1852	Kimberley, The Right Honourable the Earl of, M.A., P.C., 35, <i>Lowndes-square, S.W.</i>
1883	*King, Bolton, B.A., <i>Toynbee Hall, 28, Commercial-street, E.</i>
1888	King, John, F.S.A.A., 59, <i>St. Thomas's-road, Chorley, Lancashire.</i>
1884	Kirby, Horace Woodburn, F.C.A., 19, <i>Birchin-lane, E.C.</i>
1888	*Kitson, Sir James, Bart., J.P., <i>Gledhow Hall, Leeds.</i>
1889	Kloetgen, W. J. H., 16, <i>Watling-street, E.C.</i>
1889	Klugh, Arthur George, F.S.A.A., 3, <i>Newgate-street, E.C.</i>
1890	Knox, Hon. John Jay, <i>National Bank of the Republic, New York, U.S.A.</i>
1878	*Kusaka, Yoshio, <i>First National Bank, Tokio, Japan.</i>
1883	Last, William Harrison, <i>Inland Revenue, Somerset House, W.C.</i>
1885	Latham, Baldwin, M. Inst. C.E., 7, <i>Westminster-chambers, S.W.</i>
1874	Lawes, Sir John Bennett, Bart., LL.D., F.R.S., F.C.S., <i>Rothamsted-park, St. Albans.</i>
1878	Lawrence, Alexander Macclesfield, 18, <i>St. Helen's-place, E.C.</i>
1873	Lawrie, James, F.R.G.S., <i>Bellefield, Lanark, N.B.</i>
1883	Lawson, Charles Henry, <i>Green's End, Woolwich.</i>
1873	Lawson, Robert, LL.D. (<i>Inspector-General of Army Hos-</i> <i>pitals</i>), 20, <i>Lansdowne-road, Notting-hill, W.</i>

Year of Election.	
1890	Lawson, William Ramage, 57, <i>Fitzjohn's-avenue, Hampstead, N.W.</i>
1873	Lea, Thomas, M.P., 14, <i>Elvaston-place, Queen's-gate, S.W.</i>
1883	*Leadam, Isaac Saunders, M.A., 1, <i>The Cloisters, Temple, E.C.</i>
1890	Leakey, James, <i>Fleetwood, Maldon-road, Wallington, Surrey.</i>
1886	Leathes, Stanley M., <i>Trinity College, Cambridge.</i>
1883	Lec, Henry, <i>Reform Club, S.W.</i>
1886	*Lee, Sir Joseph C., <i>Mosley-street, Manchester.</i>
1884	Lee, William, <i>Fairlands, Worplesdon, Guildford, Surrey.</i>
1879	*Leete, Joseph, 36, <i>St. Mary-at-hill, E.C., & Eversden, S. Norwood-park.</i>
1877	LEFEVRE, THE RIGHT HON. GEORGE SHAW, M.P., M.A., J.P. (<i>Honorary Vice-President</i>), 18, <i>Bryanston-square, W.</i>
1877	*Leggatt, Daniel, LL.D., 5, <i>Raymond-buildings, Gray's-inn, W.C.</i>
1880	Leighton, Stanley, M.P., <i>Sweeney Hall, Oswestry, Salop.</i>
1887	Leitch, Alexander, 17, <i>King William-street, E.C.</i>
1888	*Le Poer Trench, Col. The Hon. W., R.E., J.P., 3, <i>Hyde Park-gardens, W.</i>
1887	*Le Roy-Lewis, Herman, B.A. (<i>Trinity College, Cambridge</i>), <i>Westbury House, Petersfield, Hants.</i>
1889	Lescher, Herman, 6, <i>Clement's-lane, Lombard-street, E.C.</i>
1885	Lever, Ellis, <i>Culcheth Hall, Bowdon, Cheshire.</i>
1862	Lewis, Robert, 1, <i>Bartholomew-lane, E.C.</i>
1888	*Liberty, A. Lasenby, 13, <i>Cornwall-terrace, Regent's-park, N.W.</i>
1877	Ligertwood, Thomas, M.D., F.R.C.S., <i>Royal Hospital, Chelsea, S.W.</i>
1884	*Lines, William Edward, <i>c/o R. S. Lines, Noel House, Hertford.</i>
1878	Lloyd, Thomas, 20, <i>Bucklersbury, E.C.</i>
1879	Lloyd, Wilson, F.R.G.S., <i>Myvod House, Wood-green, Wednesbury.</i>
1888	Loch, Charles S., B.A., <i>Hedge Row Cottage, Queen Anne's-gardens, Bedford-park.</i>

Year of Election.	
1882	*LONGSTAFF, GEORGE BLUNDELL, M.A., M.B., <i>Highlands, Putney Heath, S.W.</i>
1888	Lord, John, <i>54. Springfield-road, South Hampstead, N.W.</i>
1876	*Lornie, John Guthrie, J.P., <i>Rosemount, Kirkcaldy (of Birnam and Pitcastle), N.B.</i>
1834	Lovelace, The Right Honourable the Earl of, F.R.S., <i>East Horsley-park, Ripley, Surrey.</i>
1888	Lovelock, Henry,
1886	*Low, Malcolm, M.P., <i>22, Roland-gardens, S.W.</i>
1889	Lowies, John, <i>Hill-crest, Darenth-road, Stamford-hill, N.</i>
1865	LUBBOCK, THE RIGHT HON. SIR JOHN, BART., M.P., F.R.S. (Trustee), <i>High Elms, Beckenham, Kent.</i>
1878	Lucas, Sir Thomas, Bart., J.P., <i>37, Great George-street, Westminster, S.W.</i>
1885	Luckie, David Mitchell, J.P., <i>Wellington, New Zealand.</i>
1885	Mabbs, The Rev. Goodeve, <i>12, Fairlawn-grove, Chiswick, W.</i>
1875	*Mabson, Richard Rous <i>20, Bucklersbury, E.C.</i>
1873	*Macandrew, William, J.P., <i>Westwood, near Colchester.</i>
1873	McArthur, Alexander, M.P., <i>Raleigh Hall, Brixton, S.W.</i>
1890	McAuslane, James (<i>Dunster House, Mincing-lane, E.C.</i>), <i>Glenrose, Balham Park-road, S.W.</i>
1884	McCabe, William, LL.B., F.I.A., <i>17, Clarence-square, Toronto, Canada.</i>
1888	McCankie, James, <i>34, St. Andrew's-square, Edinburgh.</i>
1867	M'CLean, Frank, <i>Rusthall House, Tunbridge Wells.</i>
1873	McDermott, Edward, <i>Hill Side, Grove-park, Camberwell, S.E.</i>
1887	Macdonald, Andrew J., <i>40, Threadneedle-street, E.C.</i>
1872	Macdonell, John, <i>Room 183, The Royal Courts of Justice, Strand, W.C.</i>

Year of Election.	
1873	*McEwen, Laurence T., c/o. R. A. McLean, 1, Queen Victoria-street, E.C.
1890	McKay, Andrew Davidson, 13, York-street, Liverpool.
1890	Mackay, John Kirkland, 52, Mark-lane, E.C.
1886	*Mackenzie, Colin, F.R.G.S.,
1878	McKewan, William, 21, Lombard-street, E.C.
1876	*McLean, Robert Allan, F.R.G.S., 1, Queen Victoria-street, E.C.
1863	*Maclure, John William, M.P., J.P., &c., Carlton Club; The Home, Whalley Range, Manchester,
1887	McNaught, Robert, c/o Archibald Macnaught, Macnaught Brothers, Greenock.
1888	McNiel, Henry 5, Cross-street, Manchester.
1875	Macpherson, Hugh Martin, F.R.C.S. (Inspector-General), 14, St. James's-square, S.W.
1887	Macpherson, Walter Charles Gordon, Howrah, E.I.R., Bengal, India.
1883	Macqueen, Robert Davidson Barkly, 20, Upper Addison-gardens, Kensington, W.
1882	MacRosty, Alexander, 13, King's Arms-yard, E.C.; West Bank, Esher.
1889	McVail, John C., M.D., &c., Holmhead, Kilmarnock, N.B.
1887	Makower, Maurice, 11, Randolph-crescent, Maida Vale, W.
1887	Malleson, Frank R., Dixton Manor House, Winchcombe, Cheltenham.
1887	Mann, James Saumarez, M.A., 6, Blandford-square, N.W.
1887	Mann, W. E., 84, Fore-street, E.C.
1884	*Manson, Frederick William, Wellfield, Muswell Hill, N.
1888	Manuel, James,
1890	Manwaring, George, 6, Albany Villas, West Brighton.
1877	*Maple, John Blundell, M.P., 8, Clarence-terrace, Regent's-park, N.W.
1889	Marks, Harry H., Loudoun Hall, N.W.
1875	Marsh, Alfred, 85, Gracechurch-street, E.C.
1880	*Marshall, Professor Alfred, M.A., Balliol Croft, Madingley-road, Cambridge.

Year of Election.	
1887	Marshall, W. Bayley, M. Inst. C.E., M.Inst. M.E., 15, <i>Augustus-road, Edgbaston, Birmingham.</i>
1887	Martin, James, 4, <i>King-street, Cheapside, E.C.</i>
1874	*MARTIN, JOHN BIDDULPH, M.A., F.Z.S. (<i>Foreign Secretary</i>), 17, <i>Hyde-park-gate, S.W.</i>
1872	*MARTIN, RICHARD BIDDULPH, M.A. (<i>Treasurer</i>), 68, <i>Lombard-street, E.C., and Chislehurst.</i>
1876	*Martin, Thomas Jaques, 84, <i>Collins-street West, Melbourne, Victoria.</i>
1879	Martin, Waldyve Alex. Hamilton, <i>The Upper Hall, Ledbury, Herefordshire.</i>
1884	Mason, William Arthur, 31a, <i>Colmore-row, Birmingham.</i>
1875	*Mathers, John Shackleton, <i>Hanover House, Leeds, Yorkshire.</i>
1883	Mathieson, Frederic Coxhead, <i>Beechworth, Hampstead, N.W.</i>
1874	May, Frank, <i>Bank of England, Threadneedle-street, E.C.</i>
1882	Medhurst, John Thomas, <i>Clay-hill, White Hart-lane, Tottenham.</i>
1883	*Medley, George Webb, 21, <i>Park-street, Park-lane, W.</i>
1853	*Meikle, James, F.I.A., 6, <i>St. Andrew's-square, Edinburgh.</i>
1890	Merriman, Hon. John Xavier, <i>Cape Town, Cape of Good Hope.</i>
1884	Merton, Zachary, 18, <i>Chesham-place, S.W.</i>
1887	Meudell, George Dick, F.S.A.A., 59, <i>Queen-street, Melbourne, Victoria.</i>
1881	Meyer, Robert Alexander, <i>Whitehall Club, Parliament-street, S.W.</i>
1875	Mildmay, Henry Bingham, J.P., 8, <i>Bishopsgate-street Within, E.C.</i>
1873	Millar, William Henry, <i>Cleveland Lodge, New Park-road, Brixton-hill, S.W.</i>
1890	Miller, Gordon William (<i>Admiralty, Spring Gardens, S.W.</i>), 37, <i>Granville-park, Lewisham, S.E.</i>
1877	Miller, Robert Ferguson, <i>Ramsden-square, Barrow-in-Furness.</i>
1879	Miller, William, 67, <i>Queen Victoria-street, E.C.</i>
1888	Mills, Sir Charles, K.C.M.G., C.B., 7, <i>Albert Mansions, Victoria-street, S.W.</i>
1889	Mills, Major Henry Farnsby, <i>Junior United Service Club, Charles-street, S.W.</i>
1882	Milnes, Alfred, M.A., 22a, <i>Goldhurst-terrace, S. Hampstead, N.W.</i>

Year of Election.	
1874	*Mocatta, Frederick D., F.R.G.S., 9, <i>Connaught-place, W.</i>
1878	Moffat, Robert J., <i>Cherry Hinton Hall, near Cambridge.</i>
1888	*Molloy, William R. J., M.R.I.A. (<i>National Education Board</i>), 17, <i>Brookfield-terrace, Donnybrook, Dublin.</i>
1879	Moore, Alfred, C.E., <i>Queen's Chambers, 2, Ridgfield, Manchester.</i>
1887	Moore, Arthur Chisholm, 23, <i>Essex-street, Strand, W.C.</i>
1874	Moore, Charles Rendall, 137, <i>Brockley-road, Lewisham-road, S.E.</i>
1877	Moore, Edward, 3, <i>Crosby-square, E.C.</i>
1885	Moore, Harold Edward, 41, <i>Bedford-row, W.C.</i>
1878	*Moore, John Byers Gunning, <i>Loymount, Cookstown, Ireland.</i>
1880	More, Robert Jasper, M.P., <i>Linley Hall, Bishopscastle, Salop.</i>
1872	Morgan, Octavius Vaughan, M.P., J.P., 13, <i>The Boltons, South Kensington, S.W.</i>
1874	*Morris, James, M.D., F.R.C.S., 13, <i>Somers-place, Hyde-park-square, W.</i>
1888	Morris, John, 13, <i>Park-st., Grosvenor-square, W.</i> ; 6, <i>Old Jewry, E.C.</i>
1877	Mort, William, 1, <i>Stanley-crescent, Notting-hill, W.</i>
1873	Morton, James, 30, <i>Forsyth-street, Greenock, N.B.</i>
1885	*Mosley, Tonman, <i>Bangors, Iver, Uxbridge.</i>
1847	*MOUAT, FREDERIC JOHN, M.D., F.R.C.S., LL.D. (<i>President</i>), 12, <i>Durham-villas, Kensington, W.</i>
1886	Mowbray, Robert Gray Cornish, M.P., 19, <i>Down-street, Piccadilly, W.</i>
1886	Moxon, Thomas B., <i>Manchester and County Bank, Limited, Manchester.</i>
1889	Muir, Robert, jun., <i>Clydesdale, Wolseley-road, Crouch-end, N.</i>
1883	Muirhead, Henry James, <i>Oakwood, Farquhar-road, Upper Norwood, S.E.</i>
1880	Mulhall, Michael George, <i>Standard Office, Buenos Ayres.</i>
1890	Mumby, Bonner Harris, M.D., <i>Portsmouth.</i>
1878	*Mundella, The Right Hon. Anthony John, M.P., F.R.S. 16, <i>Elvaston-place, Queen's-gate, S.W.</i>
1878	Murray, Adam, <i>Hazeldean, Kersal, Manchester.</i>

Year of
Election.

- 1879 Murray, James Charles,
Holmsted, Bushey-heath, Herts.
- 1890 Musgrave, James,
Brookland, Heaton, Bolton.
- 1887 Nacian, J. J.,
Ministry of Finance, Bucharest, Roumania.
- 1888 Narraway, W. F.,
Crooms Hill House, Greenwich, S.E.
- 1889 Nash, William, M.D., M.R.C.S. (Brigade-Surgeon),
18, Victoria-street, S.W.
- 1865 Nasmith, David,
4, Brick-court, Temple, E.C.
- 1878 *Nathan, Henry,
Dashwood House, New Broad-street, E.C.
- 1854 Neild, Alfred,
Mayfield Print Works, Manchester.
- 1869 NEISON, FRANCIS GUSTAVUS PAULUS, F.I.A.,
93, Adelaide-road, South Hampstead, N.W.
- 1885 Nelson, Edward Montague, J.P.,
Hanger Hill House, Ealing, W.
- 1877 Nevill, Charles Henry,
11, Queen Victoria-street, E.C.
- 1862 Newbatt, Benjamin, F.I.A., F.R.G.S.,
15, St. James's-square, S.W.
- 1888 Newgass, Benjamin,
54, Prince's-gate, S.W.
- 1883 Newmarch, Mrs. Elizabeth,
Mulnath, 5, Harrold-road, Upper Norwood, S.E.
- 1889 Newsholme, Arthur, M.D.,
15, College-road, Brighton.
- 1888 Newton, Alfred J.,
Northwood, Chislehurst, Kent.
- 1889 Newton, Henry William (Alderman),
2, Ellison-place, Newcastle-on-Tyne.
- 1878 Newton, John,
Ash Lea, Croydon-road, Penge, S.E.
- 1878 Nicholson, Professor J. S., M.A.
University of Edinburgh.
- 1858 Nightingale, Miss Florence,
10, South-street, Park-lane, W.
- 1877 Nix, Samuel Dyer, F.C.A.,
3, King-street, Cheapside, E.C.

Year of Election.	
1871	*Noble, Benjamin, F.R.A.S., <i>North-Eastern Bank, Newcastle-on-Tyne.</i>
1883	Norfolk, J. Ernest Walter, <i>Bridge House, 181, Queen Victoria-street, E.C.</i>
1877	Norman, H.E. General Sir Henry Wylie, K.C.B., G.C.M.G. <i>(Governor of Queensland), Brisbane, Queensland.</i>
1878	Northbrook, The Right Hon. the Earl of, G.C.S.I., D.C.L., <i>4, Hamilton-place, Piccadilly, W.</i>
1878	Notthafft, Theodor, <i>c/o Discount Bank, St. Petersburg.</i>
1880	Oakeshott, George Alfred,
1888	Oakley, Henry (<i>General Manager, Great Northern Railway</i>), <i>37, Chester-terrace, Regent's-park, N.W.</i>
1884	Odgers, William Blake, LL.D., <i>4, Elm-court, Temple, E.C.</i>
1880	*Oelsner, Isidor, <i>Highfield, Westwood-park, Forest-hill, S.E.</i>
1887	O'Galligan, George R., C.E.,
1862	Ogbourne, Charles Henry, A.I.A. <i>29, Dalhousie-square, Calcutta.</i>
1885	OGLE, WILLIAM, M.A., M.D., F.R.C.P., &c., (<i>Vice-President</i>), <i>General Register Office, Somersct House, W.C.</i>
1885	*Oldham, John, <i>River Plate Telegraph Company, Montevideo.</i>
1884	Oldroyd, Mark, M.P., <i>Hyrstlands, Dewsbury, Yorkshire.</i>
1878	Oppenheim, Henry, <i>16, Bruton-street, Bond-street, W.</i>
1877	Ormond, Richard, <i>24, Grainger-street West, Newcastle-on-Tyne.</i>
1889	Oung, Moung Hla, <i>Treasury Buildings, Calcutta.</i>
1887	Owen, Evan F., A.I.A., <i>Office of Government Statist, Melbourne, Victoria.</i>

Year of Election.	
1887	*Page, Edward D., (<i>Box 3382,</i>) <i>c/o Faulkner, Page, & Co., New York City, U.S.A.</i>
1886	Pain, James, <i>St. Mary's-street, Ely.</i>
1866	*PALGRAVE, ROBERT HARRY INGLIS, J.P., F.R.S., <i>Belton, Great Yarmouth, Norfolk.</i>
1879	Palmer, George, J.P., <i>The Acacias, Reading.</i>
1884	Palmer, J. T., <i>8, Wine Office-court, Fleet-street, E.C.</i>
1887	Pankhurst, Richard Marsden, LL.D., <i>Outer Temple, Strand,</i> <i>London, W.C., and 10, St. James's-square, Manchester.</i>
1888	Pannell, William Henry, <i>Library-chambers, Basinghall-street, E.C.</i>
1878	Park, David Francis, C.A., F.F.A., A.I.A., <i>17, Change-alley, Cornhill, E.C.</i>
1887	Parker, Archibald, <i>Camden-wood, Chislehurst, Kent.</i>
1878	Parry, Thomas, <i>Grafton-place, Ashton-under-Lyne.</i>
1879	Partridge, Henry Francis, L.D.S., &c., <i>Sussex House, Sussex-place, South Kensington, S.W.</i>
1883	Paterson, John, <i>1, Walbrook, E.C.</i>
1888	Pattullo, James Durie, <i>31, St. Swithin's-lane, E.C.</i>
1877	Paul, Henry Moncreiff, <i>12, Lansdowne-crescent, Notting-hill, W.</i>
1878	Paulin, David, <i>44, Moray-place, Edinburgh.</i>
1884	*Peace, Walter, <i>21, Finsbury-circus, E.C.</i>
1857	*Pearson, Professor C. H., <i>c/o Sir John Pearson, Q.C., 75, Onslow-square, S.W.</i>
1876	Pearson, Edwin James, <i>Athenæum Club, S.W.</i>
1880	*Pease, Sir Joseph Whitwell, Bart., M.P., <i>Hutton Hall, Gisborough, Yorks.</i>
1876	*Peek, Sir Henry William, Bart., <i>Wimbledon House, S.W.</i>
1878	Pellereau, Hon. Mr. Justice Etienne, <i>8, Rue du Commandant Riviere, Paris.</i>
1886	Pembroke, The Right Hon. the Earl of, <i>Wilton House, Salisbury.</i>
1880	Pender, Sir John, K.C.M.G., <i>18, Arlington-street, S.W.; 50, Old Broad-street, E.C.</i>
1887	Percival, William, <i>Constitutional Club, S.W.</i>
1888	Perratt, William Henry, A.I.A., <i>193, The Grove, Hammersmith, W.</i>

Year of Election.	
1890	Peters, John Wyatt, <i>The Gables, Grove-road S., Southsea.</i>
1883	Petheram, Frederick William, F.C.A., <i>2, Lombard-court, E.C.</i>
1886	Peto, Sir Henry, Bart., M.A., <i>Fleet House, Weymouth.</i>
1887	Phelps, Colonel A., <i>23, Augustus-road, Edgbaston, Birmingham.</i>
1886	*Phelps, The Rev. Lancelot Ridley, M.A., <i>Oriel College, Oxford.</i>
1874	Phené, John Samuel, LL.D., F.S.A., <i>5, Carlton-terrace, Oakley-street, S.W.</i>
1879	Philips, Herbert, <i>35, Church-street, Manchester.</i>
1877	Phillipps, Henry Matthews, <i>41, Seething-lane, E.C.</i>
1887	Phillips, Charles H., J.P. (<i>Registrar-General of Trinidad</i>), <i>Court House, Port of Spain, Trinidad.</i>
1883	Phillips, John Orwell, <i>Horseferry-road, Westminster, S.W.</i>
1871	*Pickering, John, F.R.G.S., F.S.A., <i>86, Thicket-road, Anerley, S.E.</i>
1885	Pierrard, Paul, <i>24, Coleman-street, E.C.</i>
1878	*Pim, Joseph Todhunter, <i>Rinnamara, Monkstown, County Dublin.</i>
1838	*Pinckard, George Henry, J.P., <i>12, Grove-road, St. John's-wood, N.W.</i>
1886	Pink, J. Francis, <i>62, Chandos-street, Strand, W.C.</i>
1885	Pitman, Walter Hayward, <i>30, Newgate-street, E.C.</i>
1890	Pittar, Thomas J., <i>H.M. Custom House, E.C.</i>
1879	Pixley, Francis William, <i>23, Linden-gardens, W.</i>
1881	Planck, Charles, M.R.C.S. (<i>Deputy Surgeon-General</i>), <i>Allahabad, India.</i>
1883	Platt, James, <i>Rookwood, Hampstead, N.W.</i>
1861	Plowden, Sir Wm. Chicele, K.C.S.I.. M.P., 5, <i>Park-crescent,</i> <i>Portland-place, W.; Wyke Hall, Gillingham, Dorset.</i>
1888	Plumb, Benjamin M.,
1869	POCHIN, HENRY DAVIS, J.P., <i>Bodnant Hall, Eglwysbach, R.S.O., Denbighshire.</i>
1888	Pollard, James, <i>Chamber of Commerce, Edinburgh.</i>
1884	Polson, John, <i>West Mount, Paisley, N.B.</i>

Year of Election.	
1883	Pope, William Agnew, 113, <i>Cannon-street, E.C.</i>
1885	Popplewell, William Willott, <i>Victoria Chambers, Southampton-buildings, W.C.</i>
1879	*POWELL, FRANCIS SHARP, M.P. (<i>Horton Old Hall, Bradford</i>), 1, <i>Cambridge-square, Hyde Park, W.</i>
1888	Powell, James Heslop, 33, <i>Cornhill, E.C.</i>
1871	Power, Edward, 16, <i>Southwell-gardens, South Kensington, S.W.</i>
1884	Power, John Danvers, 3, <i>Westminster-chambers, Victoria-street, S.W.</i>
1877	*Prance, Reginald Heber, <i>Frognaal, Hampstead, N.W.</i>
1877	Praschkauer, Maximilian, 109, <i>Fenchurch-street, E.C.</i>
1867	*Pratt, Robert Lindsay, 80, <i>Bondgate, Darlington.</i>
1888	Price, Henry Sherley, <i>Woodbury Lodge, Breakspears-road, St. John's, S.E.</i>
1887	*Price, L. L., M.A., <i>Oriel College, Oxford.</i>
1877	PRICE-WILLIAMS, RICHARD, M. INST. C.E. (<i>Vice-President</i>), 33, <i>Parliament-street, S.W.</i>
1887	Probyn, Leslie Charles, 79, <i>Onslow-square, S.W.</i>
1889	Probyn, Major Clifford, 55, <i>Grosvenor-street, Grosvenor-square, W.</i>
1884	*Proctor, William, 89, <i>Corporation-street, Manchester.</i>
1886	Provand, Andrew Dryburgh, M.P., <i>Lloyd's House, Manchester.</i>
1871	PULESTON, SIR JOHN HENRY, M.P., 2, <i>Bank-buildings, Princes-street, E.C.</i>
1886	Pulley, Joseph, 90, <i>Piccadilly, W.</i>
1885	Purvis, Gilbert, <i>Ingle Neuk, Brackley-road, Beckenham, Kent.</i>
1879	Quail, Jesse, <i>The Mount, Blackburn.</i>
1874	Quain, Sir Richard, Bart., F.R.S., F.R.C.P., 67, <i>Harley-street, W.</i>
1888	Quirk, William Henry, 61, <i>Gracechurch-street, E.C.</i>

Year of Election.	
1833	Rabbidge, Richard, F.C.A., 32, <i>Poultry, E.C.</i>
1872	*Rabino, Joseph (<i>Chief Manager</i>), <i>Imperial Bank of Persia, Teheran.</i>
1888	*Radcliffe, Sir David, J.P., <i>Thurstaston Hall, near Birkenhead.</i>
1858	*Radstock, The Right Honourable Lord, 70, <i>Portland-place, W.</i>
1888	Rae, George, <i>Redcourt, Birkenhead.</i>
1885	Rae, John, 77, <i>Disraeli-road, Putney, S.W.</i>
1887	Raffalovich, Arthur, 43, <i>Rue de Courcelles, Paris</i>
1877	Raikes, Lieut.-Col. George Alfred, F.S.A., F.R. His. Soc., 63, <i>Belsize-park, Hampstead, N.W.</i>
1860	Ramsay, Alexander Gillespie, F.I.A., <i>Canada Life Assurance Co., Hamilton, Canada West.</i>
1885	Randell, James S., 19, <i>Alfred-street, Bath.</i>
1880	Rankin, James, M.P., 35, <i>Ennismore-gardens, Prince's Gate, S.W.</i>
1881	Raper, Robert George, <i>Chichester.</i>
1884	Raphael, Alfred, 87, <i>Alexandra-road, N.W.</i>
1889	Raphael, Herbert H., 4, <i>Cumberland-place, Regent's-park, N.W.</i>
1859	Rathbone, P. H., <i>Greenbank Cottage, Liverpool.</i>
1878	Rathbone, William, M.P., 18, <i>Prince's-gardens, Prince's-gate, S.W.</i>
1884	*Ravenscroft, Francis, <i>Birkbeck Bank, Chancery-lane, W.C.</i>
1874	*Ravensstein. Ernest George, F.R.G.S., 91, <i>Upper Tulse-hill, Brixton, S.W.</i>
1889	Rawcliffe, Henry, J.P. (Alderman), <i>Beechwood, Rock Ferry, Birkenhead.</i>
1886	Rawlins, Frederick, <i>Southport, Queensland.</i>
1877	*Rawlins, Thomas, 45, <i>King William-street, E.C.</i>
1835	RAWSON, SIR RAWSON W., K.C.M.G., C.B. (<i>Honorary Vice-President</i>), 68, <i>Cornwall-gardens, Queen's-gate, S.W.</i>
1888	Read, Thomas William, 30, <i>Castle-street, Liverpool.</i>
1890	Reade, Herbert, 10, <i>Herbert Crescent, Hans-place, S.W.</i>

Year of Election.	
1889	*Reed, Thomas, F.C.A., 63, <i>King-street, South Shields.</i>
1888	Reid, Herbert Lloyd, <i>Welsh View, Walton-park, Clevedon, Somerset.</i>
1888	Rew, Robert Henry, 57, <i>Netherwood-road, W.</i>
1886	Rhens, Robert, 20, <i>Fussett-square, Dalston, E.</i>
1888	Rhodes, George Webber, 131, <i>Wool Exchange, E.C.</i>
1879	Rhodes, John George, 46, <i>St. George's-road, S.W.</i>
1890	Richards, Fred., 29, <i>Northampton-square, E.C.</i>
1888	Richardson, J. H., 8, <i>Finch-lane, Cornhill, E.C.</i>
1888	Richmond, Edwin, <i>Gladstone-buildings, Sheffield.</i>
1888	Ridgway, John, J.P., <i>Heath House, Cheddleton, Leek.</i>
1873	Ripon, The Most Hon. the Marquess of, K.G., F.R.S, &c., 9, <i>Chelsea Embankment, S.W.</i>
1889	Rippon, Robert Whitfield, LL.B., 2, <i>The Cloisters, Temple, E.C.</i>
1887	Roberts, Arthur Herbert, F.C.A., F.R.G.S., <i>Caledonian Chambers, St. Mary-street, Cardiff.</i>
1882	Roberts, Edward, F.R.A.S., (<i>Nautical Almanac Office</i>), 3, <i>Verulam-buildings, Gray's Inn, W.C.</i>
1890	Roberts, Sir William, M.D., F.R.S., 8, <i>Manchester-square, W.</i>
1885	Robertson, Thomas Stewart, <i>Collins-street West, Melbourne, Victoria.</i>
1887	Robinson, Henry James, 31, <i>Spencer-road, Putney, S.W.</i>
1885	Rodger, Adam Kier, 81, <i>Renfield-street, Glasgow.</i>
1886	Roechling, Herman A., A.M. Inst. C.E., 23, <i>Highfield-street, Leicester.</i>
1880	*Ronald, Byron L., 14, <i>Upper Phillimore-gardens, W.</i>
1873	*Rosebery, The Right Hon. the Earl of, LL.D., F.R.S. 38, <i>Berkeley-square, W.</i>
1865	Ruck, George Thomas, <i>The Hawthorns, Dorville-road, Lee, S.E.</i>
1890	Ruffer, Marc Armand, M.A., M.D., B.Sc. (Oxford), 27, <i>Torrington-square, W.C.</i>
1879	Runtz, John, <i>Linton Lodge, Lordship-road, Stoke Newington, N.</i>
1888	Rusher, Edward Arthur, F.I.A., 142, <i>Holborn Bars, E.C.</i>

Year of Election.	
1886	Russell, Arthur B., A.C.A., 11, <i>Ludgate-hill, E.C.</i> ; 20, <i>Beacon-hill, Camden-rd., N.</i>
1878	Russell, Richard F., 8, <i>John-street, Adelphi, W.C.</i>
1887	Russell, Thomas, C.M.G., 59, <i>Eaton-square, S.W.</i>
1890	Rutherford, Frederick William, 54, <i>St. Vincent-street, Glasgow.</i>
1873	Rutherford-Elliott, J. G., <i>Elphinstone, Tyndall's Park-road, Clifton, Bristol.</i>
1887	Sacré, Alfred Louis, C.E., 60, <i>Queen Victoria-street, E.C.</i>
1873	*Salisbury, The Most Hon. the Marquess of, K.G., P.C., F.R.S., 20, <i>Arlington-street, W.</i>
1881	Salmon, James, 21, <i>Finsbury Pavement, E.C.</i>
1875	*Salomons, Sir David Lionel, Bart., J.P., <i>Broom-hill, Tunbridge Wells.</i>
1876	Salt, Thomas, M.P., <i>Weeping Cross, Stafford.</i>
1868	Samuelson, Sir Bernhard, Bart., M.P., F.R.S., 56, <i>Prince's-gate, Hyde-park, S.W.</i>
1888	Sandell, Edward, C.A., 181, <i>Queen Victoria-street, E.C.</i>
1889	Sandell, Frederic David, 181, <i>Queen Victoria-street, E.C.</i>
1886	Sauerbeck, Augustus, 4, <i>Moorgate-street-buildings, E.C.</i>
1877	Saunders, Charles Edward, M.D., <i>County Asylum, Hayward's Heath, Sussex.</i>
1852	Saunders, James Ebenezer, F.G.S., 9, <i>Finsbury-circus, E.C.</i>
1879	Saunders, William, <i>Mount View, Streatham, S.W.</i>
1888	Sawyer, Lucian Willard, <i>Billiter-square-buildings, E.C.</i>
1887	*Scarth, Leveson, M.A., <i>Keeverstone, Manor-road, Bournemouth.</i>
1883	Schidrowitz, Samuel, 102, <i>Oxford-gardens, Notting-hill, W.</i>
1877	Schiff, Charles, 43, <i>Lothbury, E.C.</i>

Year of Election.	
1877	Schneidau, Charles John, 6, <i>Westwick-gardens, West Kensington-park, W.</i>
1883	*Schwann, John Frederick, <i>Oakfield, Wimbledon, S.W., and 6, Moorgate-street, E.C.</i>
1883	Sclanders, Alexander, 10, <i>Austin Friars, E.C.</i>
1885	Scott, James Henry, <i>St. Mildred's House, Poultry, E.C.</i>
1885	Scott, Rev. John D., M.A., <i>St. Oswald's, Chester.</i>
1888	Scotter, Charles (<i>General Manager</i>), <i>Waterloo Station, Waterloo-road, S.E.</i>
1887	SEATON, EDWARD, M.D., LOND., F.R.C.P., 35, <i>George-street, Hanover-square, W.</i>
1880	*Seeley, Charles, jun., <i>Sherwood Lodge, Nottingham.</i>
1886	Selwyn, Captain Charles W., M.P., 21, <i>Lowndes-square, S.W.</i>
1886	Seyd, Ernest J. F. 17, <i>Gracechurch-street, E.C.</i>
1873	Seyd, Richard, 38, <i>Lombard-street, E.C.</i>
1888	Shaw, James Charles, 35, <i>Leinster-gardens, Hyde Park, W.</i>
1886	Shaw-Stewart, Michael Hugh, M.P., D.L., 7, <i>Charles-street, Berkeley-square, W.</i>
1879	Shepherd, Wallwyn Poyer Burnett, M.A., 24, <i>Old Square, Lincoln's Inn, W.C.</i>
1885	Sherwin, Joseph Henry; 16, <i>Whitehall-place, S.W.</i>
1888	Shillcock, Joshua, B.A., <i>Bank of England, West Branch, Burlington-gardens, W.</i>
1888	Shuttleworth, Thomas G., <i>Queen's Insurance-buildings, Church-street, Sheffield.</i>
1871	Sidgwick, Professor Henry, M.A., <i>Trinity College, Cambridge.</i>
1886	Silver, S. W., 3, <i>York-gate, Regent's Park, N.W.</i>
1878	Simmonds, G. Harvey, 1, <i>Whitehall, S.W.</i>
1850	Singer, Charles Douglas, 53, <i>The Common, Upper Clapton, E.</i>
1886	Sitwell, Sir George Reresby, Bart., J.P., <i>Renishaw Hall, Chesterfield.</i>
1882	Skinner, Charles Weeding, <i>Hill Crest, Theydon Bois, Essex.</i>
1881	Skrine, Francis Henry, J.P., <i>c/o Messrs. King, Hamilton, and Co., Calcutta, India.</i>
1888	Slade, Alfred Thomas, <i>Wardrobe-chambers, Queen Victoria-street, E.C.</i>

LIST OF FELLOWS.

Year of Election.	
1888	Slade, Francis William, 17, <i>Victoria-street, Westminster, S.W.</i>
1883	Sly, Richard Stevens, F.R.G.S., <i>Fern Villa, Queen's-road. New Cross Gate, S.E.</i>
1869	Smee, Alfred Hutcheson, M.R.C.S., <i>The Grange, Wallington, Surrey.</i>
1886	*Smith, Arthur Manley, 29, <i>Lincoln's Inn-fields, W.C.</i>
1878	*Smith, Charles, M.R.I.A., F.G.S., Assoc. Inst. C.E., <i>c/o Dr. Gilbert, F.R.S., Harpenden, St. Albans.</i>
1883	*Smith, The Hon. Sir Donald A., K.C.M.G., LL.D., 1157, <i>Dorchester-street, Montreal, Canada.</i>
1871	Smith, E. Cozens, 1, <i>Old Broad-street, E.C.</i>
1883	Smith, E. Woodley, A.C.A., 28, <i>Budge-row, Cannon-street, E.C.</i>
1889	Smith, George Armitage, M.A., (Lond.), 26, <i>Regent's Park-road. N.W.</i>
1878	*Smith, George, LL.D., C.I.E., <i>Serampore House, Napier-road, Edinburgh.</i>
1888	Smith, H. Llewellyn, B.A. (Oxon), B.Sc. (Lond.), 49, <i>Beaumont-square, E.</i>
1889	Smith, Henry Wells, A.C.A., 33, <i>Fargate, Sheffield.</i>
1877	Smith, Howard S., A.I.A., F.F.A. 37, <i>Bennett's Hill, Birmingham.</i>
1878	*Smith, James, <i>South Indian Railway, Trichinopoly, Madras Presidency.</i>
1877	Smith, John, 8, <i>Old Jewry, E.C.</i>
1879	Smith, John Fisher, 76, <i>Cheapside, E.C.</i>
1887	Smith, Joseph, <i>Oakeswell Hall, Wednesbury.</i>
1883	Smith, Samuel, M.P., 7, <i>Delahay-street, Westminster, S.W.</i>
1880	Smith, Thomas Sherwood, <i>Firgrove, Keynsham, near Bristol.</i>
1890	Smith, William Alexander, 21, <i>Castlereagh-street, Sydney, New South Wales.</i>
1888	Smith, Walter J., 19, <i>West Smithfield, E.C.</i>
1867	*Smith, The Right Honourable William Henry, M.P., 3, <i>Grosvenor-place, S.W.</i>
1887	Suell, Arthur Henry, 27, <i>Mincing-lane, E.C.</i>
1884	Solomon, The Hon. Michael, C.M.G. (Jamaica), <i>c/o Joseph Bravo and Co., 48, St. Mary Axe, E.C.</i>
1855	Sowray, John Russell, <i>Office of Woods, Forests, &c., 1, Whitehall-place, S.W.</i>

Year of Election	
1889	Spackman, J. Woolsey. <i>The Daltons, St. Albans.</i>
1889	Speirs, Edwin Robert, 90, <i>Queen-street, E.C.</i>
1867	*Spencer, Robert James, <i>High-street, Portsmouth.</i>
1883	Spicer, Albert, <i>Woodford, Essex, and 50, Upper Thames-street, E.C.</i>
1856	*Sprague, Thomas Bond, M.A., F.I.A., 26, <i>St. Andrew-square, Edinburgh.</i>
1872	Spriggs, Joseph, <i>Foxton, near Market Harbro'.</i>
1882	Stack, Thos. Neville, 3, <i>Church-lane, College-green, Dublin.</i>
1856	*Stainton, Henry Tibbats, F.R.S., <i>Mountsfield, Lewisham, S.E.</i>
1885	Standfield, John, 44, <i>Lillieshall-road, Clapham, S.W.</i>
1889	Stanton, Arthur G., 13, <i>Rood-lane, E.C., & 70, Granville-park, Blackheath, S.E.</i>
1877	Staples, Sir Nathaniel Alexander, Bart., <i>Lissan, Cookstown, Tyrone, Ireland.</i>
1880	Stark, James, 17, <i>King's Arms-yard, E.C.</i>
1888	Steele, William Johnstone,
1880	Stephens, William Davies, J.P., 4, <i>Abbotsford-terrace, Newcastle-on-Tyne.</i>
1882	*Stern, Edward De, 11, <i>Princes-gate, S.W.</i>
1885	Stevens, Marshall, <i>Highfield House, Urmston, near Manchester.</i>
1887	Stewart, Robert Muter, 51, <i>Milton-street, Cripplegate, E.C.</i>
1877	Stone, William Alfred, 90, <i>Cannon-street, E.C.; Hayton, Bramley Hill, Croydon.</i>
1889	Stow, Harry Vane, <i>National Liberal Club, Whitehall-place, S.W.</i>
1865	Strachan, Thomas Young, F.I.A., 88, <i>Cannon-street, E.C.</i>
1872	Strachey, General Richard, R.E., C.S.I., F.R.S., 69, <i>Lancaster-gate, W.</i>
1880	Strutt, Hon. Frederick, <i>Milford House, near Derby.</i>
1884	*Sugden, Richard, <i>The Farre Close, Brighouse, Yorkshire.</i>
1880	*Summers, William, M.P., <i>Reform Club, Pall Mall, S.W.</i>
1881	Sykes, George Samuel, 1, <i>Grant's-lane, Calcutta, India.</i>

Year of
Election.

- 1859 *Tait, Patrick Macnaghten, F.R.G.S.,
- 1889 Tarling, Charles,
Stoneleigh House, Warltersville-road, Crouch-hill, N.
- 1889 Tattersall, William,
Hazelwood, Hale, Cheshire.
- 1889 Tayler, Stephen Seaward (Alderman),
151, Brixton-road, S.W.
- 1880 Taylor, George,
6, Queen Anne's-gate, S.W.
- 1888 *Taylor, Theodore Cooke, J.P.,
Sunny Bank, Batley, Yorkshire.
- 1884 Tempamy, Thomas William, F.R.H.S.,
25, Bedford-row, W.C.
- 1888 Temperley, William Angus, jun.,
2, St. Nicholas-buildings, Newcastle-on-Tyne.
- 1880 Temple, Sir Richard, Bart., G.C.S.I., M.P., D.C.L., &c.,
Heath Brow, Hampstead, N.W., and Carlton Club, S.W.
- 1890 Tenney, John,
Exchequer and Audit Department, Somerset House, W.C.
- 1888 Theobald, John Wilson,
75, Palmerston-buildings, E.C.
- 1889 Thodey, William Henry,
479, Collins-street, Melbourne, Victoria.
- 1888 Thomas, David Alfred, M.P.,
Llanwern, near Newport, Mon.
- 1887 Thomas, John,
18, Wood-street, E.C.
- 1879 Thomas, W. Cave,
8, Fitzroy-street, Fitzroy-square, W.
- 1864 *Thompson, Henry Yates,
26a, Bryanston-square, W.
- 1868 Thomson, James,
35, Nicholas-lane, E.C.
- 1871 Thomson, Thomas D.,
57, Moorgate-street, E.C.
- 1890 Thring, The Right Hon. Lord, K.C.B.,
5, Queen's Gate-gardens, S.W.
- 1889 Tims, James,
6, Queen Anne-terrace, Battersea-park, S.W.
- 1882 Tinker, James,
Hordlecliff, Lymington, Hants.
- 1879 Tipping, William,
Oakfield House, Ashton-under-Lyne.

Year of Election.	
1889	Touch, George Alexander, 47, <i>Goldhurst-terrace, N.W.</i>
1868	*Treatt, Frank Burford, J.P., <i>Fernmount, Bellenger River, New South Wales.</i>
1868	Tritton, Joseph Herbert, 54, <i>Lombard-street, E.C.</i>
1888	Trotter, John Townley, 27, <i>Brazennose-street, Manchester.</i>
1887	Tunley, George, 3, <i>Foley-avenue, Hampstead, N. W.</i>
1878	Turnbull, Alexander, 118, <i>Belsize park-gardens, N.W.</i>
1890	Turnbull, Charles Corbett, <i>c/o W. A. Turnbull, J.P., 2, Fenchurch-avenue, E.C.</i>
1890	*Turner, Rev. Harward, B.Sc., F.R.M.S., 23, <i>Rue des Jardins, Lille (Nord), France.</i>
1885	Turner, William, <i>Board of Trade, Cardiff.</i>
1890	Tyldsley, Thomas, 68, <i>Trafford-street, Farnworth, near Bolton.</i>
1889	Tyler, John W., <i>Southwold Lodge, Cleveland-road, South Woodford, E.</i>
1841	Tyndall, William Henry, F.I.A., <i>Morlands, Oxford-road, Redhill.</i>
1877	*Umlin, Richard Denny, 22, <i>Stafford-terrace; Phillimore-gardens, W.</i>
1880	Van de Linde, Gérard, F.C.A., 12, <i>Laurence Pountney-lane, Cannon-street, E.C.</i>
1888	Van Raalte, Marcus, 22, <i>Austin Friars, E.C.</i>
1884	Veevers, Richard, <i>Woningworth, Fulwood-park, Preston.</i>
1890	Venn, John, D.Sc., F.R.S., <i>Gonville and Caius College, Cambridge.</i>

Year of Election.	
1889	Venning, Charles Harrison, 10, <i>Lynette-avenue, Clapham-common, S.W.</i>
1888	Verdin, William Henry, J.P., <i>Winsford, Cheshire.</i>
1886	Vernon, The Right Hon. Lord, <i>Sudbury Hall, Derby.</i>
1888	Vian-Williams, Rev. Harry, 3, <i>Waterloo-place, North Shields.</i>
1876	Vigers, Robert, 4, <i>Frederick's-place, Old Jewry, E.C.</i>
1885	Vincent, Frederick James, A.I.A., 23, <i>Harvest-road, Holloway, N.</i>
1877	Vine, Sir John Richard Somers, 1, <i>Adam-street, Adelphi, W.C.</i>
1890	Walford, Ernest L., 2, <i>Shorter's-court, E.C.</i>
1890	Walkley, William Henry, <i>Hope House, Elthorne-road, Hornsey Rise, N.</i>
1882	Wallen, Robert, J.P., <i>Harlech, Hawthorn, near Melbourne, Victoria.</i>
1868	Wallis, Charles James, 93, <i>Brecknock-road, Camden-road, N.</i>
1880	Wallis, E. White, 49, <i>Clifton-hill, St. John's Wood, N.W.</i>
1888	Walmsley, Frederic, 49, <i>Hanging Ditch, Manchester.</i>
1876	Walter, Arthur Fraser, <i>Finchampstead, Wokingham, Berks.</i>
1850	Walter, John, 40, <i>Upper Grosvenor-street, W.</i>
1879	Wansey, Arthur H., <i>Sambourne, Stoke Bishop, Bristol.</i>
1888	Ward, Henry, 103, <i>Cannon-street, E.C., and Eaton-road, Sutton.</i>
1888	Warren, Reginald Augustus, J.P., <i>Preston-place, near Worthing.</i>
1888	Wartnaby, William Wade, <i>Market Harborough, Leicestershire.</i>
1886	Waters, Alfred Charles, <i>General Register Office, Somerset House, Strand, W.C.</i>
1865	Waterhouse, Edwin, B.A., A.I.A., F.C.A., 41, <i>Gresham-street, E.C.</i>

Year of Election.	
1883	Watson, T. Wilkinson, 183, <i>West George-street, Glasgow.</i>
1882	Watson, Walter, <i>Pulbro Lodge, Northampton-park, Canonbury, N.</i>
1883	Watson, William Livingstone, 7, <i>Wetherby-gardens, South Kensington, S.W.</i>
1885	*Watt, William, 17, <i>Queen's-road, Aberdeen.</i>
1888	Webb, Henry Barlow, 7, <i>Warrior-square-terrace, St. Leonards-on-Sea.</i>
1873	Webster, James Hume, 14, <i>Aldford-street, Park-lane, W.</i>
1887	Weir, Archibald, M.A., Oxon., <i>Highland, Windmill-hill, Enfield.</i>
1873	*Welby, Sir Reginald Earle, K.C.B., <i>The Treasury, Whitehall, S.W.</i>
1874	Welch, Charles. <i>Guildhall, E.C. (Representing the Library Committee of the Corporation of the City of London.)</i>
1890	Weller, William Hamilton, <i>Roseleigh, Tolworth, near Surbiton, Surrey.</i>
1873	Wells, W. Lewis, 50, <i>Old Broad-street, E.C.</i>
1855	Welton, Thomas Abercrombie, <i>Rectory Grove House, Clapham, S.W.</i>
1879	Wenley, James Adams, <i>Bank of Scotland, Bank-street, Edinburgh.</i>
1886	Westhead, Thomas, <i>Castletown, Stafford.</i>
1879	*Westlake, John, Q.C., LL.D., <i>The River House, 3, Chelsea Embankment, S.W.</i>
1882	*Whadcoat, John Henry, <i>Crown Buildings, Old Broad-street, E.C.</i>
1883	*Whadcoat, William Edward, 112, <i>Grosvenor-road, Highbury New-park, N.</i>
1878	Wharton, James, <i>Edgehill, Netherhall-gardens, Fitz John's-avenue, N.W.</i>
1887	Whinney, Frederick, 8, <i>Old Jewry, E.C.</i>
1859	Whitbread, Samuel, M.P., 10, <i>Ennismore-gardens, Princes-gate, S.W.</i>
1876	Whitcher, John, Jr., F.I.A., 81, <i>King William-street, E.C.</i>
1887	*White, The Rev. George Cecil, M.A., <i>Nutshalling Rectory, Southampton.</i>
1863	White, Leedham, 25, <i>Cranley-gardens, South Kensington, S.W.</i>
1871	White, William, 23, <i>Wynell-road, Forest-hill, S.E.</i>
1888	Whitehead, Sir James, Bart., J.P., D.L., &c. (Alderman), <i>Highfield House, Catford.</i>

Year of Election.	
1884	Whiteley, William, <i>Westbourne-grove, Bayswater, W.</i>
1879	* Whitwill, Mark, J.P., <i>Bristol.</i>
1884	Wightman, Charles, <i>1, Fenchurch-avenue, E.C.</i>
1888	Wilkinson, James H., <i>9, Priory-place, Doncaster.</i>
1875	Wilkinson, Thomas Read, <i>Manchester and Salford Bank, Manchester.</i>
1860	Willans, John Wrigley, <i>The Woodlands, Kirkstall, Leeds.</i>
1864	Williams, Frederick Bessant, <i>46, Leicester-square, W.C.</i>
1881	* Williams, Henry Maunder, <i>269, Kent-street, Sydney, N.S.W.</i>
1870	Williams, Henry Reader, <i>6, Lime-street, E.C., and The Priory, Hornsey, N.</i>
1888	Williams, John,
1888	* Williams, Robert, Jun., <i>20, Birchin-lane, E.C.</i>
1888	Williamson, John W., <i>4, Stone-buildings, Lincoln's Inn, W.C.</i>
1888	Wills, John Tayler, B.A., F.R.G.S., <i>273, Vauxhall Bridge-road, S.W., and Esher, Surrey.</i>
1884	Wilson, James (<i>Deputy Commissioner</i>), <i>Shahpur, Panjab, India.</i>
1874	* Wilson, Robert Porter, <i>5, Cumberland-terrace, Regent's-park, N.W.</i>
1890	Winter, Alexander, <i>79, Sinclair-road, West Kensington-park, W.</i>
1884	Wishart, G. D., <i>8, Livingstone-avenue, Sefton-park, Liverpool.</i>
1889	Woodford, Ethelbert G., <i>Pretoria, Transvaal, South African Republic.</i>
1887	Woodhouse, Coventry Archer, <i>30, Mincing-lane, E.C.</i>
1888	Woolfe, Thomas Rodriques, A.C.A., <i>65, Watling-street, E.C.</i>
1838	Woolhouse, Wesley Stoker Barker, F.R.A.S., <i>Alwyne Lodge, Alwyne-road, Canonbury, N.</i>
1890	Woolcombe, Robert Lloyd, LL.D., M.R.I.A., <i>14, Waterloo-road, Dublin.</i>
1890	Worroll, Charles, <i>Adderley-street, Cape Town.</i>
1878	Worsfold, Rev John Napper, M.A., <i>Haddlesey Rectory, near Selby, Yorkshire.</i>
1888	Worsfold, William Basil, M.A. (Oxon.), <i>Moore College, Sydney, New South Wales.</i>

Year of Election	
1887	Worthington, A. W., B.A., <i>Old Swinford, Stourbridge.</i>
1887	Wreford, George, <i>33, Carey-street, Lincoln's-inn, W.C.</i>
1880	Wren, Walter, <i>7, Powis-square, W.</i>
1883	Wright, Bryce McMurdo, F.R.G.S., F.Z.S., F.R. Hist. Soc., <i>26, Savile-row, W.</i>
1879	Yeats, John, LL.D., <i>7, Beaufort-square, Chepstow.</i>
1886	Yerburgh, Robert Armstrong, M.P., <i>27, Princes Gate, S.W.</i>
1888	*Yglesias, Miguel, <i>2, Tokenhouse-buildings, E.C.</i>
1877	*Youll, John Gibson, <i>Jesmond-road, Newcastle-on-Tyne.</i>
1882	Young, E. M., <i>13, Leadenhall-street, E.C.</i>

*** *The Executive Committee request that any inaccuracy in the foregoing list may be pointed out to the ASSISTANT SECRETARY, and that all changes of address may be notified to him, so that delay in forwarding communications and the publications of the Society may be avoided.*

HONORARY FELLOWS.

HIS ROYAL HIGHNESS THE PRINCE OF WALES, K.G.

Honorary President.

Argentine Republic.

Year of
Election.

1890. **Buenos Ayres..** FRANCISCO LATZINA, Director General of Statistics; late Astronomer of the Observatory, and late Professor of Mathematics at the University, of Cordoba; Honorary Member of the National Department of Hygiene; Member of the International Statistical Institute, of the Geographical and Statistical Societies of Paris, of the Society of Commercial Geography of Paris, and of the Argentine Geographical Institute, &c.

Austria and Hungary.

1877. **Vienna.....** DR. HUGO RITTER VON BRACHELLI, Aulic Councillor, Chief of the Statistical Department, Ministry of Commerce; President of the Permanent Commission for Commercial Values; Member of the Imperial and Royal Central Statistical Commission; Professor at the Technical High School in Vienna; Commander of the Russian Orders of St. Anna and St. Stanislaus, of the Luxembourg Order of the Oak-Crown; Officer of the Order of the Crown of Italy; Knight of the Order of the House of Saxe-Ernestine; Officer of the French Order of Public Instruction, &c.; Associate of the Statistical Society of Paris.
1890. ,, KARL THEODOR VON INAMA-STERNEGG, Doctor of Political Economy; President of the Imperial and Royal Central Statistical Commission; Professor at the University.
1874. **Budapest.....** KARL KELETI, Ph.D., Ministerial and Aulic Councillor; Chief of the Royal Hungarian Statistical Bureau; Knight of the Austrian Order of Leopold; Officer of the Order of the Crown of Italy; Commander of the Russian Order of St. Stanislaus, and of the Portuguese Order of la Villa Viçosa; Member of various learned associations, &c.
1877. **Vienna** MAX WIRTH, Economist; formerly Director of the Federal Statistical Bureau of Switzerland.

Belgium.

Year of
Election.

1879. **Brussels** EUGÈNE JANSSENS, Doctor of Medicine; Chief Inspector of the Board of Health of the City of Brussels; President of the Federal Committee of Health of the Brussels District; Member of the Central Statistical Commission and of the Superior Council of Health; Knight of the Belgian Order of Leopold and of the French Legion of Honour; Officer of the Italian Order of SS. Maurice and Lazare; Civic Cross of the 1st Class; Officer of the Academy of France; Associate of the Statistical Society of Paris and of the International Statistical Institute; Member of the Royal Academy of Medicine, and of the Local Medical Commission.

China.

1890. **Peking** SIR ROBERT HART, G.C.M.G., LL.D., Inspector-General of Imperial Maritime Customs, China.

Denmark.

1878. **Copenhagen** .. VIGAND ANDREAS FALBE - HANSEN, Member of the "Folkething;" Professor of the University of Copenhagen.
1852. .. PETER ANTON SCHLEISNER, Doctor of Medicine, State Councillor; Knight of the Order of the "Dannebrog," and of the Swedish Order of the North Star; President of the Royal Danish Institute of Vaccination; Member of the Royal Danish General Board of Health.

France.

1880. **Paris**..... JACQUES BERTILLON, Doctor of Medicine; Chief of the Statistical Works of the City of Paris; Member of the Superior Council of Statistics; of the Consultative Committee of Public Hygiene of France; and of the Statistical Society of Paris.
1856. ,, MAURICE BLOCK, Knight of the Legion of Honour, and of Orders of Sweden, Russia, Prussia, Bavaria, Austria and Hungary, Greece, Italy, Spain, and Portugal; Member of the Institute of France, of the Society of Political Economy of Paris, and of many Academies and Scientific Societies.
1879. ,, ARTHUR CHERVIN, Doctor of Medicine and Surgery; Director of the Paris Institute for Stammerers; Member of the Superior Council of Statistics and of the International Statistical Institute, &c.
1878. ,, MAXIMIN DELOCHE, Honorary Director of the General Statistics of France; Commander of the Legion of Honour; Officer of the Order of Public Instruction; Commander of the Austrian Order of Francis Joseph; Member of the Institute of France, and of several learned societies.

Year of
Election.**France—Contd.**

1890. **Paris**..... ALFRED DE FOVILLE, Chief of the Statistical Bureau of the Ministry of Finance; Professor at the National Conservatoire of Arts and Trades (Chair of Industrial Economy and Statistics); Knight of the Legion of Honour; Laureate of the Institute of France; Past President of the Statistical Society of Paris; Member of the International Statistical Institute and of the Superior Council of Statistics.
1870. " DR. CLÉMENT JUGLAR, Past President of the Statistical Society of Paris; Vice-President of the Society of Political Economy of Paris.
1860. " PIERRE ÉMILE LEVASSEUR, Professor at the College of France and at the Conservatoire of Arts and Trades; President of the Statistical Commission for Primary Instruction; Member of the Institute of France; Past President of the Statistical Society of Paris; Vice-President of the International Statistical Institute, of the Superior Council of Statistics, and of the Society of Political Economy, &c.
1860. " MARIE LOUIS PIERRE FELIX ESQUIROU DE PARIEU, Senator; Grand Cross of the Legion of Honour; and Companion of several foreign orders; Member of the Institute of France.
1880. " JEAN BAPTISTE LÉON SAY, Deputy; Ex-Minister of Finance; Member of the Institute of France; President of the Society of Political Economy of Paris; Past President of the Statistical Society of Paris, of the National Society of Horticulture, and of the National Society of Agriculture.
1887. " DANIEL WILSON, Ex-Deputy; Ex-Under-Secretary of State; Past President of the Statistical Society of Paris.
1876. " THE PRESIDENT (for the time being) OF THE STATISTICAL SOCIETY OF PARIS.

Germany.

1871. **Stuttgart**..... SIR HENRY PAGE-TURNER BARRON, Baronet, C.M.G., British Minister-Resident to the King of Wurtemberg.
1878. **Berlin** DR. KARL BECKER, "Geheimer Ober-Regierungsrath;" Director of the Imperial Statistical Office of the German Empire; Member of the Royal Central Statistical Commission of Prussia and Corresponding Member of the Central Statistical Commission of Belgium; Honorary Member of the Geographical and Statistical Society of Frankfurt; and Member of the International Statistical Institute, &c.
1890. " KARL JULIUS EMIL BLENCK, "Geheimer Ober-Regierungsrath;" Director of the Royal Statistical Bureau of Prussia, also Member of the Central Statistical Commission and of the Central Board of Control of the Survey of Prussia.

Year of
Election.

Germany—Contd.

1854. **Dresden** DR. ERNST ENGEL, "Geheimer Ober-Regierungs-rath;" formerly Director of the Royal Statistical Bureau of Prussia; Member of several learned Societies.
1877. **Munich** DR. GEORG VON MAYR, Ex-Under Secretary of State in the Imperial Ministry for Alsace-Lorraine; formerly Director of the Royal Statistical Bureau of Bavaria; Associate of the Statistical Society of Paris.
1860. ,, DR. GEORG KARL LEOPOLD SEUFFERT, formerly Chief Inspector and Director of the Royal Custom-House at Simbach; Knight of the Bavarian Order of St. Michael, 1st Class.
1876. **Frankfort** THE PRESIDENT (for the time being) OF THE GEOGRAPHICAL AND STATISTICAL SOCIETY OF FRANKFORT.

Italy.

1879. **Rome** GEROLAMO BOCCARDO, Senator; Councillor of State; Doctor of Laws; late Professor at the University and at the Superior Naval School of Genoa; Grand Officer of the Order of SS. Maurice and Lazare; Knight of the Order of Civil Merit; Member of the Academy "dei Lincei," of the Academy of Naples, of the Institutes of Science of Milan, Venice, and Palermo; and of the Cobden Club, of the International Statistical Institute, of the Academy of Madrid, and of the Deputation of National History, &c.
1874. ,, LUIGI BODIO, Doctor of Laws; Professor at the University of Rome; Director-General of the Statistical Department of the State.
1880. **Pavia** LUIGI COSSA, LL.D.; Professor of Political Economy; Commander of the Order of the Crown of Italy; Officer of the Order of SS. Maurice and Lazare; Member of the Superior Council of Public Instruction, and of the Cobden Club; Honorary Member of the American Economic Association; Ordinary Member of the Academy "dei Lincei" and of the Royal Institute of Sciences of Milan; Correspondent of the Royal Academies of Lisbon, Modena, Turin, Naples, &c.
1845. **Venice** FRANCESCO FERRARA, Senator; Professor and Director of the Royal Superior School of Commerce at Venice; late Minister of Finance; Member of the Academy "dei Lincei."
854. **Turin**..... GIOVANNI FLECHIA, Professor of Comparative history of the Classical and Neolatin Languages, and of Sanscrit, at the University of Turin; Knight of the Civil Order of Savoy; Commander of the Order of the Crown of Italy; Officer of the Order of SS. Maurice and Lazare; Fellow of the Academy of Sciences of Turin and of the Academy "dei Lincei."

Year of
Election.*Italy—Contd.*

1880. **Rome** ANGELO MESSEDAGLIA, Senator ; Professor of the Royal University of Rome.
1868. „ THE MARQUIS ERMENEGILDO DEI CINQUE QUINTILI, Advocate ; General Secretary of the Hospitals Commission of Rome.

Netherlands.

1890. **Amsterdam** .. ANTHONY BEAUJON, Doctor of Laws ; Professor of Political Economy and Statistics at the University of Amsterdam, and Director of the Statistical Institute founded by the Netherlands Statistical Society ; Member of the Statistical Society, and Corresponding Member of the Political Economy Society of Paris, also of the Central Statistical Commission of Belgium, and Member of the International Statistical Institute.

Russia.

1873. **St. Petersburg** HIS EXCELLENCY MONS. PIERRE SEMENOFF (SEMENOW), Senator ; Privy Councillor to His Imperial Majesty ; President of the Imperial Statistical Council ; President of the Imperial Geographical Society ; Honorary Member of the Academy of Sciences in St. Petersburg ; Associate of the Statistical Society of Paris.
1890. „ HIS EXCELLENCY MONS. NICOLAS TROÏNITSKY, Former Governor ; Privy Councillor ; Director of the Central Statistical Committee of the Ministry of the Interior ; Life Member of the Statistical Council ; Member of the Imperial Geographical Society of Russia, of the International Statistical Institute, and of the Statistical Society of Paris.
1877. „ HIS EXCELLENCY MONS. ALEXANDRE DE VESSÉLOVSKY, Councillor of State ; Director of the Statistical Year-Book and of the Journal of the Ministry of Finance ; Member of the Statistical Council.

Spain.

1886. **Madrid**..... HIS EXCELLENCY SEÑOR DON CARLOS IBAÑEZ É IBAÑEZ DE IBERO, MARQUIS DE MULHACÉN, General of the Spanish Army ; late Director-General of the Geographical and Statistical Institute of Spain ; President of the International Geodesic Association ; President of the International Committee of Weights and Measures, and of the Permanent Commission of Weights and Measures of Spain ; Member of the Royal Academy of Sciences of Madrid ; Corresponding Member of the Institute of France (Academy of Sciences) ; Associate of the Royal Academy of Brussels, &c.

Year of
Election.

Spain—Contd.

1845. **Madrid.....** HIS EXCELLENCY SEÑOR DON JOSÉ MAGÁZ Y JAYME, Advocate, and Member of the Council of State; Ex-Deputy of the Cortes; Ex-Senator; Ex-Director-General of Treasury; Ex-Under-Secretary of the Ministry of Finance; Grand Cross of the Order of Isabella Catolica; Commander of the Order of Carlos 3º.

Sweden and Norway.

1858. **Christiania....** THORKIL HALVORSEN ASCHEHOUG, Doctor of Laws; Professor of Political Economy at the University of Christiania; Assessor Extraordinary of the Supreme Court of Norway; Commander of the First Class of the Swedish Orders of St. Olave and of the North Star; and of the Danish Order of the "Dannebrog;" Corresponding Member of the Institute of France; Member of the Institute of International Law, of the International Statistical Institute, and of the Academies of Christiania, Trondhjem and Upsala, also of the Royal Historical Society of Denmark.
1874. ,, .. ANDERS NICOLAI KIÆR, Director of the Central Statistical Bureau of Norway; Associate of the Statistical Society of Paris.
1860. ,, .. THOMAS MICHELL, Esq., C.B., Her Majesty's Consul-General for Norway.
1890. **Stockholm** ELIS SIDENBLADH., Ph.D., Director in Chief of the Central Statistical Bureau of Sweden; President of the Royal Statistical Commission; Commander, Officer, and Knight of several Swedish and Foreign Orders; Member of the Royal Academies of Sciences and of Agriculture, at Stockholm; Honorary and Corresponding Member of several foreign learned Societies.

Switzerland.

1890. **Bern.....** LOUIS GUILLAUME, Doctor of Medicine; Director of the Federal Statistical Bureau; Secretary of the International Penitentiary Commission.

Turkey.

1877. **Constantinople.** HIS HIGHNESS AHMED VEFYK PACHA Senator, &c.

United States.

1873. **Albany, N.Y. ..** THE HON. WILLIAM BARNES, Lawyer; Ex-Superintendent of the Insurance Department, State of New York.

Year of
Election.**United States—Contd.**

1881. **Washington ..** JOHN SHAW BILLINGS, Esq., A.M., M.D., LL.D., Edinburgh and Harvard; D.C.L., Oxon; Surgeon, U.S. Army; Member of the National Academy of Sciences, &c.
1870. **Taunton, Mass.** THE HON. JOHN ELIOT SANFORD, Lawyer; Speaker of the House of Representatives; Insurance Commissioner; Chairman of the Board of Harbour and Land Commissioners.
1890. **New York** RICHMOND MAYO SMITH, Esq., M.A., Professor of Political Economy and Social Science in Columbia College; Vice-President of the American Statistical Association; Member of the International Statistical Institute.
1876. **Boston, Mass. ..** FRANCIS AMASA WALKER, Esq., Ph.D., LL.D., formerly Superintendent of the United States Census; President of the Massachusetts Institute of Technology; President of the American Statistical Association, and of the American Economic Association; Member of the National Academy of Sciences; Corresponding Member of the Central Statistical Commission of Belgium.
1870. **Norwich, Conn.** THE HON. DAVID AMES WELLS, D.C.L., LL.D., Economist. Late Special Commissioner of Revenue of the United States; Chairman of Commission for the Revision of Taxes of the State of New York; Lecturer on the Principles and Practice of Taxation, Harvard University, Cambridge, United States; Member of the Board of Arbitration of American Railways; Corresponding Member of the Institute of France; President of the American Social Science Association; and of the American Free Trade League; Chairman in 1883 of the Department of Finance of the American Social Science Association.
1877. **Washington ..** EDWARD YOUNG, Esq., A.M., Ph.D., formerly Chief of the Bureau of Statistics, United States of America.

India.

1886. **Calcutta** JAMES EDWARD O'CONOR, Esq., C.I.E., Assistant Secretary to the Government of India, Department of Finance and Commerce.

Dominion of Canada.

1876. **Toronto** JOHN LANGTON, Esq., M.A., late Auditor-General.

New South Wales.

1876. **Sydney.....** EDWARD GRANT WARD, Esq., J.P., Registrar-General; Chairman of Board of Land Titles Commissioners.

*New Zealand.*Year of
Election.

1876. **Wellington** SIR JAMES HECTOR, K.C.M.G., M.D., F.R.S.S.,
L. and E., F.G.S., &c. Director of the Geological
Survey, of the Meteorological Department, and of
the New Zealand Institute, &c.

Queensland.

1877. **Brisbane** HENRY JORDAN, Esq., Member of Legislative
Assembly.

Tasmania.

1876. **Hobart** EDWIN CRADOCK NOWELL, Esq., J.P., Clerk
of Executive and Legislative Councils of Tasmania;
late Government Statistician; Clerk to the Federal
Council of Australasia in its first three Sessions.

Victoria.

1875. **Melbourne** HENRY HEYLYN HAYTER, Esq., C.M.G.,
Government Statist of Victoria; Officer of the
French Order of Public Instruction; Chevalier of
the Order of the Crown of Italy; Honorary
Member of the Statistical and Social Inquiry
Society of Ireland, of the Statistical Association
of Tokio, of the Royal Society of Tasmania, and of
the Intercolonial Medical Congress of Australasia;
Honorary Corresponding Member of the Society of
Arts, London, of the Statistical Society of Man-
chester, of the American Statistical Association,
Boston, of the Commercio-Geographical Society of
Berlin, of the Geographical Society of Bremen,
and of the Royal Society of South Australia;
Honorary Foreign Member of the Statistical Society
of Paris; Fellow and Honorary Corresponding
Secretary for Victoria of the Royal Colonial Insti-
tute; Member of the International Statistical
Institute.
1858. ,, WILLIAM HENRY ARCHER, Esq., K.S.G.,
F.I.A., F.L.S., &c., Barrister-at-Law.

Great Britain and Ireland.

1876. **Manchester** .. THE PRESIDENT (for the time being) OF THE
MANCHESTER STATISTICAL SOCIETY.
1876. **Dublin** THE PRESIDENT (for the time being) OF THE
STATISTICAL AND SOCIAL INQUIRY
SOCIETY OF IRELAND.

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so that delay in forwarding communications and the publications
of the Society may be avoided.

ROYAL STATISTICAL SOCIETY.

Copy of Charter.

Victoria, by the Grace of God of the United Kingdom of Great Britain and Ireland Queen, Defender of the Faith.

To all to whom these Presents shall come, Greeting:—

Whereas Our Right trusty and entirely beloved cousin, Henry, Third Marquess of Lansdowne, Knight of the Most Noble Order of the Garter, Charles Babbage, Fellow of the Royal Society, John Elliott Drinkwater, Master of Arts, Henry Hallam, Fellow of the Royal Society, the Reverend Richard Jones, Master of Arts, and others of Our loving subjects, did, in the year One thousand eight hundred and thirty-four, establish a Society to collect, arrange, digest and publish facts, illustrating the condition and prospects of society in its material, social, and moral relations; these facts being for the most part arranged in tabular forms and in accordance with the principles of the numerical method, and the same Society is now called or known by the name of “The Statistical Society.”

And Whereas it has been represented to Us that the same Society has, since its establishment, sedulously pursued such its proposed objects, and by its publications (including those of its transactions), and by promoting the discussion of legislative and other public measures from the statistical point of view, has greatly contributed to the progress of statistical and economical science.

And Whereas distinguished individuals in foreign countries, as well as many eminent British subjects, have availed themselves of the facilities offered by the same Society for communicating important information largely extending statistical knowledge; and the general interest now felt in Statistics has been greatly promoted and fostered by this Society.

And Whereas the same Society has, in aid of its objects, collected a large and valuable library of scientific works and charts, to which fresh accessions are constantly made; and the said Society has hitherto been supported by annual and other subscriptions and contributions to its funds, and has lately acquired leasehold premises in which the business of the said Society is carried on.

And Whereas in order to secure the property of the said Society, to extend its operations, and to give it its due position among the Scientific Institutions of Our kingdom, We have been besought to grant to Sir Rawson William Rawson, Knight Com-

mander of the Most Distinguished Order of St. Michael and St. George, and Companion of the Most Honourable Order of the Bath, and to those who now are Members of the said Society, or who shall from time to time be elected Fellows of the Royal Statistical Society hereby incorporated, Our Royal Charter of Incorporation for the purposes aforesaid.

1. **Now Know Ye** that We, being desirous of encouraging a design so laudable and salutary, of Our especial grace, certain knowledge and mere motion, have willed, granted, and declared and Do by these Presents, for Us, Our heirs and successors, will, grant, and declare that the said Sir Rawson William Rawson, Knight Commander of the Most Distinguished Order of St. Michael and St. George, and Companion of the Most Honourable Order of the Bath, and such other of Our loving subjects as now are Members of the said Society, or shall from time to time be elected Fellows of "The Royal Statistical Society" hereby incorporated according to such regulations or bye laws as shall be hereafter framed or enacted, and their successors, shall for ever hereafter be by virtue of these presents one body politic and corporate, by the name of "**The Royal Statistical Society,**" and for the purposes aforesaid, and by the name aforesaid, shall have perpetual succession and a common seal, with full power and authority to alter, vary, break, and renew the same at their discretion, and by the same name to sue and be sued, implead and be impleaded, answer and be answered, unto and in every Court of Us, Our heirs and successors.

2. **The** Royal Statistical Society, in this Charter hereinafter called "The Society," may, notwithstanding the statutes of mortmain, take, purchase, hold and enjoy to them and their successors a hall, or house, and any such messuages or hereditaments of any tenure as may be necessary, for carrying out the purposes of the Society, but so that the yearly value thereof to be computed at the rack rent which might be gotten for the same at the time of the purchase or other acquisition, and including the site of the said hall, or house, do not exceed in the whole the sum of Two thousand pounds.

3. **There** shall be a Council of the Society, and the said Council and General Meetings of the Fellows to be held in accordance with this Our Charter shall, subject to the provisions of this Our Charter, have the entire management and direction of the concerns of the Society.

4. **There** shall be a President, Vice-Presidents, a Treasurer or Treasurers, and a Secretary or Secretaries of the Society. The Council shall consist of the President, Vice-Presidents, and not

less than twenty Councillors; and the Treasurer or Treasurers, and the Secretary or Secretaries if honorary.

5. **The** several persons who were elected to be the President, Vice-Presidents, and Members of the Council of the Statistical Society at the Annual Meeting held in the month of June, One thousand eight hundred and eighty-six, shall form the first Council of the Society, and shall continue in office until the first Election of officers is made under these presents as hereinafter provided.

6. **General** Meetings of the Fellows of the Society may be held from time to time, and at least one General Meeting shall be held in each year. Every General Meeting may be adjourned, subject to the provisions of the Bye Laws. The following business may be transacted by a General Meeting, viz. :—

- (a.) The Election of the President, Vice-Presidents, Treasurer or Treasurers, Secretary or Secretaries, and other Members of the Council of the Society.
- (b.) The making, repeal, or amendment of Bye Laws.
- (c.) The passing of any proper resolution respecting the affairs of the Society.

7. **Bye Laws** of the Society may be made for the following purposes, and subject to the following conditions, viz. :—

- (a.) For prescribing the qualification and condition of tenure of office of the President; the number, qualifications, functions, and conditions of tenure of office of the Vice-Presidents, Treasurers, Secretaries, and Members of Council, and Officers of the Society; for making regulations with respect to General Meetings and Meetings of the Council and proceedings thereat, and for the Election of any persons to be Honorary Fellows or Associates of the Society, and defining their privileges (but such persons, if elected, shall not be Members of the Corporation), and for making regulations respecting the making, repeal, and amendment of Bye Laws, and generally for the government of the Society and the management of its property and affairs.
- (b.) The first Bye Laws shall be made at the first General Meeting to be held under these presents, and shall (amongst other things) prescribe the time for holding the first election of officers under these presents.

8. **The** General Meetings and adjourned General Meetings of the Society shall take place (subject to the rules or bye laws of the Society, and to any power of convening or demanding a

Special General Meeting thereby given) at such times and places as may be fixed by the Council.

9. **The** existing rules of the Statistical Society, so far as not inconsistent with these presents, shall be in force as the Bye Laws of the Society until the first Bye Laws to be made under these presents shall come into operation.

10. **Subject** to these presents and the Bye Laws of the Society for the time being, the Council shall have the sole management of the income, funds, and property of the Society, and may manage and superintend all other affairs of the Society, and appoint and dismiss at their pleasure all salaried and other officers, attendants, and servants as they may think fit, and may do all such things as shall appear to them necessary or expedient for giving effect to the objects of the Society.

11. **The** Council shall once in every year present to a General Meeting a report of the proceedings of the Society, together with a statement of the receipts and expenditure, and of the financial position of the Society, and every Fellow of the Society may, at reasonable times to be fixed by the Council, examine the accounts of the Society.

12. **The** Council may, with the approval of a General Meeting, from time to time appoint fit persons to be Trustees of any part of the real or personal property of the Society, and may make or direct any transfer of such property so placed in trust necessary for the purposes of the trust, or may, at their discretion, take in the corporate name of the Society conveyances or transfers of any property capable of being held in that name. Provided that no sale, mortgage, incumbrance, or other disposition of any hereditaments belonging to the Society shall be made unless with the approval of a General Meeting.

13. **No** Rule, Bye Law, Resolution, or other proceeding shall be made or had by the Society, or any meeting thereof, or by the Council, contrary to the general scope or true intent and meaning of this Our Charter, or the laws or statutes of Our Realm, and anything done contrary to this present clause shall be void.

In witness whereof We have caused these Our Letters to be made Patent.

Witness Ourself, at Westminster, the thirty-first day of January, in the fiftieth year of Our Reign.

By Warrant under the Queen's Sign Manual,

L. S.

MUIR MACKENZIE.

ROYAL STATISTICAL SOCIETY.

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RULES AND BYE-LAWS OF THE ROYAL STATISTICAL SOCIETY

Objects of the Society.

1. The objects of the Royal Statistical Society are to collect, arrange, digest and publish facts, illustrating the condition and prospects of society in its material, social, and moral relations; these facts being for the most part arranged in tabular forms and in accordance with the principles of the numerical method.

The Society collects new materials, condenses, arranges, and publishes those already existing, whether unpublished or published in diffuse and expensive forms, in the English or in any foreign language, and promotes the discussion of legislative and other public measures from the statistical point of view. These discussions form portions of the published Transactions of the Society.

Constitution of the Society.

2. The Society consists of Fellows and Honorary Fellows, elected in the manner hereinafter described.

Number of Fellows and Honorary Fellows.

3. The number of Fellows is unlimited. Foreigners or British subjects of distinction residing out of the United Kingdom may be admitted as Honorary Fellows, of whom the number shall not be more than seventy at any one time.

Proposal of Fellows.

4. Every Candidate for admission as a Fellow of the Society shall be proposed by two or more Fellows, who shall certify from their personal knowledge of him or of his works, that he is a fit person to be admitted a Fellow of the Society. Every such certificate having been read and approved of at a Meeting of the Council, shall be suspended in the office of the Society until the following Ordinary Meeting, at which the vote shall be taken.

Election of Fellows.

5. In the election of Fellows, the votes shall be taken by ballot. No person shall be admitted unless at least sixteen Fellows vote, and unless he have in his favour three-fourths of the Fellows voting.

Admission of Fellows.

6. Every Fellow elect is required to take the earliest opportunity of presenting himself for admission at an Ordinary Meeting of the Society.

The manner of admission shall be thus:—

Immediately after the reading of the minutes, the Fellow elect, having first paid his subscription for the current year or his composition, shall sign the obligation contained in the Fellowship-book, to the effect following:—

“We, who have underwritten our names, do hereby undertake, each for himself, that we will endeavour to further the good of the Royal Statistical Society for improving Statistical Knowledge, and the ends for which the same has been founded; that we will be present at the Meetings of the Society as often as conveniently we can, and that we will keep and fulfil the Bye-laws and Orders of this Society: provided that whensoever any one of us shall make known, by writing under his hand, to the Secretaries for the time being, that he desires to withdraw from the Society, he shall be free thenceforward from this obligation.”

Whereon the President, taking him by the hand, shall say,—“By the authority, and in the name of the Royal Statistical Society, I do admit you a Fellow thereof.”

Upon their admission Fellows shall have the right of attaching to their names the letters F.S.S., but not in connection with any trading or business advertisement other than the publication of any book or literary notice.

Admission of Honorary Fellows.

7. There shall be Two Meetings of the Society in the year, on such days as shall be hereafter fixed by the Council, at which Honorary Fellows may be elected.

No Honorary Fellow can be recommended for election but by the Council. At any Meeting of the Council any Member thereof may propose a Foreigner or British subject of distinction residing out of the United Kingdom, delivering at the same time a written statement of the qualifications of, offices held by, and published works of, the person proposed; and ten days' notice at least shall be given to every Member of the Council, of the day on which the Council will vote by ballot on the question whether they will recommend to the Society the election of the person proposed. No such recommendation to the Society shall be adopted unless at least three-fourths of the votes are in favour thereof.

Notice of the recommendation shall be given from the chair at the Meeting of the Society next preceding that at which the vote shall be taken thereon. No person shall be elected an Honorary Fellow unless sixteen Fellows vote and three-fourths of the Fellows voting be in his favour.

The Council shall have power to elect as Honorary Fellows, the Presidents for the time being of the Statistical Societies of Dublin, Manchester, and Paris, and the President of any other Statistical Society at home or abroad.

Payments by Fellows.

8. Every Fellow of the Society shall pay a yearly subscription of Two Guineas, or may at any time compound for his future yearly payments by paying at once the sum of Twenty Guineas.*

Defaulters.—Withdrawal of Fellows.

9. All yearly payments are due in advance on the 1st of January, and if any Fellow of the Society have not paid his subscription before the 1st of July, he shall be applied to in writing by the Secretaries, and if the same be not paid

before the 1st of January of the second year, a written application shall again be made by the Secretaries, and the Fellow in arrear shall cease to receive the Society's publications, and shall not be entitled to any of the privileges of the Society until such arrears are paid; and if the subscription be not discharged before the 1st of February of the second year, the name of the Fellow thus in arrear shall be exhibited on a card suspended in the office of the Society; and if, at the next Annual General Meeting, the amount still remain unpaid, the defaulter shall, unless otherwise authorised by the Council, be announced to be no longer a Fellow of the Society, the reason for the same being at the same time assigned. No Fellow of the Society can withdraw his name from the Society's books, unless all arrears be paid; and no resignation will be deemed valid unless a written notice thereof be communicated to the Secretaries. No Fellow shall be entitled to vote at any Meeting of the Society until he shall have paid his subscription for the current year.

Expulsion of Fellows.

10. If any Fellow of the Society, or any Honorary Fellow, shall so demean himself that it would be for the dishonour of the Society that he longer continue to be a Fellow or Honorary Fellow thereof, the Council shall take the matter into consideration; and if the majority of the Members of the Council present at some Meeting (of which and of the matter in hand such Fellow or Honorary Fellow, and every Member of the Council, shall have due notice) shall decide by ballot to recommend that such Fellow or Honorary Fellow be expelled from the Society, the President shall at its next Ordinary Meeting announce to the Society the recommendation of the Council, and at the following Meeting the question shall be decided by ballot, and if at least three-fourths of the number voting are in favour of the expulsion, the President shall forthwith cancel the name in the Fellowship-book, and shall say,—

“By the authority and in the name of the Royal Statistical Society, I do

* Cheques should be made payable to “The Royal Statistical Society,” and crossed “Messrs. Drummond and Co.”

"declare that A. B. (naming him) is no longer a Fellow (or Honorary Fellow) thereof."

And such Fellow or Honorary Fellow shall thereupon cease to be of the Society.

Trustees.

11. The property of the Society may be vested in three Trustees, chosen by the Fellows. The Trustees are eligible to any other offices in the Society.

President, Council, and Officers.

12. The Council shall consist of a President and thirty Members, together with the Honorary Vice-Presidents.

From the Council shall be chosen four Vice-Presidents, a Treasurer, the Honorary Secretaries, and a Foreign Secretary, who may be one of the Honorary Secretaries. The former Presidents who are continuing Fellows of the Society shall be Honorary Vice-Presidents. Any five of the Council shall be a quorum.

Election of President and Officers.

13. The President, Members of Council, Treasurer, and Honorary and Foreign Secretaries shall be chosen annually by the Fellows at the Annual General Meeting.

The Vice-Presidents shall be chosen annually from the Council by the President.

The President shall not be eligible for the office more than two years in succession.

Six Fellows, at least, who were not of the Council of the previous year, shall be annually elected; and of the Members retiring three at least shall be those who have served longest continuously on the Council, unless they hold office as Treasurer or Honorary or Foreign Secretary.

Nomination of President, Council, and Officers.

14. The Council shall, previously to the Annual General Meeting, nominate, by ballot, the Fellows whom they recommend to be the next President and Council of the Society. They shall also recommend for election a Treasurer and the Secretaries (in accordance with

Rule 12). Notice shall be sent to every Fellow whose residence is known to be within the limits of the metropolitan post, at least a fortnight before the Annual General Meeting, of the names of Fellows recommended by the Council.

Extraordinary Vacancies.

15. On any extraordinary vacancy occurring of the Office of President, or other Officer of the Society, the Honorary Secretaries shall summon the Council with as little delay as possible, and a majority of the Council, thereupon meeting in their usual place, shall, by ballot, and by a majority of those present, choose a new President, or other Officer of the Society, to be so until the next Annual General Meeting.

Committees.

16. The Council shall have power to appoint Committees of Fellows and also an Executive Committee of their own body. The Committees shall report their proceedings to the Council. No report shall be communicated to the Society except by the Council.

Auditors.

17. At the first Ordinary Meeting of each year, the Fellows shall choose two Fellows, not being Members of the Council, as Auditors, who, with one of the Council, chosen by the Council, shall audit the Treasurer's accounts for the past year, and report thereon to the Society, which report shall be presented at the Ordinary Meeting in February. The Auditors shall be empowered to examine into the particulars of all expenditure of the funds of the Society, and may report their opinion upon any part of it.

Meetings Ordinary and General.

18. The Ordinary Meetings of the Society shall be held monthly, or oftener, during the Session, which shall be from the 1st of November to the 1st of July in each year, both inclusive, on such days and at such hours as the Council shall declare. The Annual General Meeting shall be held on such day in the month of June of each year as shall be appointed by the Council for the time being.

Business of Ordinary Meetings.

19. The business of the Ordinary Meetings shall be to elect and admit Fellows, to read and hear reports, letters, and papers on subjects interesting to the Society. Nothing relating to the bye-laws or management of the Society shall be discussed at the Ordinary Meetings, except that the Auditors' Report shall be presented at the Ordinary Meeting in February, and that the Minutes of the Annual General Meeting, and of every Special General Meeting, shall be submitted for confirmation at the next Ordinary Meeting after the day of such Annual or Special General Meeting. Strangers may be introduced to the Ordinary Meetings, by any Fellow, with the leave of the President, Vice-President, or other Fellow presiding at the Meeting.

Business of Annual General Meeting.

20. The business of the Annual General Meeting shall be to elect the Officers of the Society, and to discuss questions on its bye-laws and management. No Fellow or Honorary Fellow shall be proposed at the Annual General Meeting. No Fellow shall propose any alteration of the rules or bye-laws of the Society at the Annual General Meeting, unless after three weeks' notice thereof given in writing to the Council, but amendments to any motion may be brought forward without notice, so that they relate to the same subject as the motion. The Council shall give fourteen days' notice to every Fellow of all questions of which such notice shall have been given to them.

Special General Meetings.

21. The Council may, at any time, call a Special General Meeting of the Society when it appears to them necessary. Any twenty Fellows may require a Special General Meeting to be called, by notice in writing signed by them, delivered to one of the Secretaries, specifying the questions to be moved. The Council shall, within one week of such notice, appoint a day for such Special General Meeting, and shall give at least one week's notice of every Special General Meeting, and of the questions to be moved, to every Fellow

within the limits of the metropolitan post, whose residence is known. No business shall be brought forward at any Special General Meeting other than that specified in the notice convening the same.

Duties of the President.

22. The President shall preside at all Meetings of the Society, Council, and Committees, which he shall attend, and in case of an equality of votes, shall have a second or casting vote. He shall sign all diplomas of admission of Honorary Fellows. He shall admit and expel Fellows and Honorary Fellows, according to the bye-laws of the Society.

Duties of the Treasurer.

23. The Treasurer shall receive all moneys due to, and pay all moneys owing by, the Society, and shall keep an account of his receipts and payments. No sum exceeding Ten Pounds shall be paid but by order of the Council, excepting always any lawful demand for rates or taxes. The Treasurer shall invest the moneys of the Society in such manner as the Council shall from time to time direct.

Duties of the Honorary Secretaries.

24. The Honorary Secretaries shall, under the control of the Council, conduct the correspondence of the Society; they or one of them shall attend all Meetings of the Society and Council, and shall duly record the Minutes of the Proceedings. They shall issue the requisite notices, and read such papers to the Society as the Council may direct.

Powers of the Vice-Presidents.

25. A Vice-President, whether Honorary or nominated, in the chair, shall act with the power of the President in presiding and voting at any Meeting of the Society or Council, and in admitting Fellows; but no Vice-President shall be empowered to sign diplomas of admission of Honorary Fellows, or to expel Fellows or Honorary Fellows. In the absence of the President and Vice-Presidents, any Member of Council may be called upon by the Fellows then present, to preside at an Ordinary or Council Meeting, with the same power as a Vice-President.

Powers of the Council.

26. The Council shall have control over the papers and funds of the Society, and may, as they shall see fit, direct the publication of papers and the expenditure of the funds, in accordance with the provisions of the Charter.

27. The Council shall be empowered at any time to frame Regulations not inconsistent with these bye-laws, which shall be and remain in force until the next Annual General Meeting, at which they shall be either affirmed or annulled; but no Council shall have power to renew Regulations which have once been disapproved at an Annual General Meeting.

28. The Council shall have the custody of the Common Seal. The Common Seal shall not be affixed to any instrument, deed, or other document, except by order of the Council and in the presence of at least two Members

of the Council, and in accordance with such other regulations as the Council shall from time to time prescribe. The fact of the seal having been so affixed shall be entered on the minutes of the Council.

29. No Dividend, Gift, Division, or Bonus in money shall be made by the Society, unto or between any of the Fellows or Members, except as hereinafter provided.

30. The Council shall publish a Journal of the Transactions of the Society, and such other Statistical Publications as they may determine upon, and may from time to time pay such sums to Editors and their assistants, whether Fellows of the Society or not, as may be deemed advisable.

31. All communications to the Society are the property of the Society, unless the Council allow the right of property to be specially reserved by the Contributors.

REGULATIONS OF THE LIBRARY.

1. The Library and the Reading Room are open daily for the use of Fellows from 10 a.m. till 5 p.m., except on Saturdays, when they are closed at 2 p.m. The Society's Rooms are entirely closed during the month of September, but Books required by Fellows can be obtained from the Library on application.

2. Fellows of the Society are permitted to take out Books on making personal application, or by letter addressed to the Librarian.

3. Fellows are not to have more than two works at a time, nor keep any books longer than a month.

4. Scientific Journals and Periodicals are not circulated until the volumes are completed and bound.

5. Cyclopædias and works of reference are not circulated, but may be lent on the written order of an Honorary Secretary for a period not exceeding *seven* days. The Assistant Secretary is allowed at his discretion to lend works of reference for a period not exceeding *three* days, reporting at the same time to the Honorary Secretaries. If works so lent be not returned within the specified time, the borrower shall incur a fine of one shilling per day per volume for each day they are detained beyond the time specified.

6. Any Fellow damaging a book, either replaces the work, or pays a fine equivalent to its value.

7. Books taken from the shelves for reference, are *not* to be replaced, but must be laid on the Library table.

8. The Secretary shall report to the Council any infringement of these regulations, and lay upon the table at each regular Meeting (*a*) a List of any "Works of Reference," that may have been borrowed, and (*b*) a List of Books that have been out more than a month.

DONORS TO THE LIBRARY.

DURING THE YEAR 1890.

(a) Foreign Countries.

Argentine Republic—

General Statistical Bureau.
 Buenos Ayres, Provincial Statistical Bureau.
 „ Municipal Statistical Bureau.
 Tucuman Provincial Statistical Bureau.
 Argentine Legation, London.
 „ Geographical Institute.

Austria and Hungary—

Central Statistical Commission.
 Statistical Department of the Ministry of Commerce.
 Hungarian Statistical Bureau.
 „ Ministry of Commerce.
 Bohemian Statistical Bureau.
 Budapest Statistical Bureau.
 Prague Statistical Bureau.

Belgium—

Bureau of General Statistics.
 Administration of Mines.
 Ministry of Foreign Affairs.
 Brussels Bureau of Hygiene.
 Royal Academy of Sciences.

Brazil. The Commissary-General of Brazil, at the Paris Exhibition of 1889.

Bulgaria. Statistical Bureau.

Chile. Department of Commercial Statistics.

China—

Imperial Maritime Customs.
 Royal Asiatic Society's Branch.

Denmark—

Royal Statistical Bureau.
 Political Economy Society.

Egypt—

Director-General of Customs.
 Egyptian Institute, Cairo.

France—

Ministry of Agriculture.
 „ Commerce.
 „ Finance.
 „ Justice.
 „ Public Instruction.
 „ Public Works.
 Paris Statistical Bureau.
 Economiste Français, The Editor, Paris.
 Rentier, Le, The Editor, Paris.
 Revue Bibliographique Universelle, The Editor, Paris.
 Revue d'Economie Politique, The Editor, Paris.
 Revue Géographique Internationale, The Editor, Paris.
 Revue des Banques, The Editor, Paris.
 Statistical Society of Paris.
 Free School of Political Science.
 Suez Canal Company, Paris.

Germany—

Imperial Statistical Bureau.
 German Consul-General, London.
 Prussian Royal Statistical Bureau.
 Saxony Royal Statistical Bureau.
 Berlin Statistical Bureau.
 Frankfort Chamber of Commerce.

During the Year 1890—Contd.(a) **Foreign Countries—Contd.***Germany—Contd.*

Frankfort Statistical Bureau.
 Hamburg Chamber of Commerce.
 „ Statistical Bureau.
 Archiv für Soziale Gesetzgebung,
 &c., The Editor. Tübingen.
 Geographical and Statistical
 Society of Frankfort.
 Railway Association, Berlin.

Greece. Statistical Bureau.

Guatemala. Statistical Bureau.

Italy—

Director-General, Statistical De-
 partment of the State.
 Director-General of Agriculture.
 Director of Public Health.
 Economista, The Editor, Florence.
 Giornale degli Economisti, The
 Editor, Bologna.

Japan—

Bureau of General Statistics.
 Central Sanitary Bureau.
 Imperial University.
 Tokyo Statistical Society.

Mexico. Statistical Bureau.

Netherlands—

Department of the Interior.
 Director of Post Office Savings
 Banks.
 Legation, London.
 Statistical Institute.

Paraguay. General Statistical Bu-
 reau.

Roumania. Central Statistical Bu-
 reau.

Russia—

Central Statistical Committee.
 Agricultural Department.

Russia—Contd.

Customs Statistical Bureau.
 Department of Assessed Taxes.
 Ministry of Finance.
 Finland Geographical Society.

Spain—

Board of Customs.
 Director-General of Indirect
 Taxation.
 Geographical & Stat. Institute.
 Geographical Society of Madrid.

Sweden. Central Statistical Bureau.

Norway. Central Statistical Bureau.

Switzerland—

Federal Assurance Bureau.
 „ Statistical Bureau.
 „ Finance and Customs
 Department.
 Aargau Statistical Bureau.
 Bern Statistical Bureau.
 Geneva Public Library.
 Statistical Society.
 Swiss Union of Commerce and
 Industry.

United States—

Bureau of Education.
 Commissioner of Labor.
 Comptroller of the Currency.
 Department of Agriculture.
 Department of State.
 Director of the Mint.
 Marine Hospital Service.
 Naval Observatory.
 Secretary of the Treasury.
 Superintendent of Census.
 Surgeon-General, U. States Army.
 Statistical Bureau, Treasury.

Connecticut State Board of Health.
Illinois Bureau of Labor Statistics.
Iowa Bureau of Labor Statistics.

During the Year 1890—Contd.(a) *Foreign Countries—Contd.**United States—Contd.**Massachusetts—*

Board of Health, Lunacy, &c.

Bureau of Statistics of Labor.

Michigan State Board of Health.*New York* State Library.

„ Museum.

„ Bureau of Labor
Statistics.*Pennsylvania* Industrial Statis-
tical Bureau.

„ University.

Rhode Island. Registrar, Provi-
dence.*Wisconsin.* State Board of Health.

Bankers' Magazine, New York.

Bradstreet's Journal, New York.

Commercial and Financial Chron-
icle of New York.Political Science Quarterly, Co-
lumbia College.*United States—Contd.*Quarterly Journal of Economics,
The Editor, Boston.Academy of Arts and Sciences,
Boston.Academy of Political and Social
Science.

Actuarial Society of America.

Economic Association, Baltimore.

Geographical Society, New York.

Philosophical Soc. of Philadelphia.

Statistical Association, Boston.

Astor Library, New York.

Columbia College, New York.

Franklin Institute, Philadelphia.

Lenox Library, New York.

Smithsonian Institution.

Uruguay—

Bureau of General Statistics.

Consul-General, London.

Venezuela. Statistical Bureau.(b) *India, Colonial, and other Possessions.**India, British—*

Finance and Commerce Depart.

Lieutenant-Governor of Bengal.

Asiatic Society of Bengal.

Bombay Branch of the Royal
Asiatic Society.*Canada—*

Department of Agriculture.

The High Commissioner, London.

Manitoba Agricultural Depart.

Insurance and Finance Chronicle.

The Editor, Montreal.

Royal Society of Canada.

Cape of Good Hope—

Colonial Secretary.

Superintendent-General of Edu-
cation.*Cape of Good Hope—Contd.*Port Elizabeth Chamber of Com-
merce.*Ceylon.* Branch of the Royal
Asiatic Society.*Jamaica.* Registrar-General of.*Mauritius.* H.E. The Governor of.*Natal.* Durban Chamber of Com-
merce.*New South Wales—*

Agent-General, London.

Government Statist, Sydney.

Director of Agriculture.

Registrar-General, Sydney.

During the Year 1890—Contd.(b) *India, Colonial, and other Possessions—Contd.**New Zealand—*

Registrar-General.
 Department of Mines.
 Agent-General, London.
 Colonial Museum, Wellington.

Queensland—

Registrar-General of.
 Registrar of Friendly Societies.

South Australia—

The Chief Secretary.
 Public Library, &c., Adelaide.

Straits Settlements. The Government Secretary, Perak.

Tasmania—

Government Statistician, Hobart.
 Royal Society of Tasmania.

Trinidad—

Registrar-General.
 Government Statist.

Victoria—

Department of Mines.
 Agent-General, London.
 Government Statist.
 Royal Society of Victoria.
 Public Library, &c., Melbourne.

(c) *United Kingdom and its several Divisions.**United Kingdom—*

Admiralty Medical Department.
 Board of Agriculture.
 Army Medical Department.
 Bankruptcy, Inspector-General of.
 Board of Trade.
 British Museum.
 Customs, H.M.
 Foreign Office.
 Home Office
 India Office.
 Inland Revenue.
 Local Government Board.
 Metropolitan Asylums Board.
 „ Fire Brigade.
 „ Police.
 „ School Board.
 Royal Mint.
 Woods, Forests, &c., H.M.

England—

Registrar-General of England.
 London. Board of Works for
 Wandsworth District.
 Birmingham Medical Officer of
 Health.
 „ The Town Clerk of.
 Liverpool Free Public Library.
 „ The Town Clerk of.
 Manchester Free Public Library.
 „ The Town Clerk of.

Ireland—

Registrar-General of Ireland.
 Dublin Commissioner of Police.

Scotland—

Registrar-General of Scotland.
 Edinburgh City Chamberlain.

(d) *Authors, &c.*

Alessio, M. Giulio, Turin.
 Aschehoug, Prof T. H., Christiania.
 Ashley, W. J., Esq., Toronto.

Baak, M. E., Netherlands.
 Babbage, Major-General H. P.
 Baden-Powell, Sir George, M.P.

During the Year 1890—Contd.(d) **Authors, &c.—Contd.**

- Bagehot, Mrs., London.
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During the Year 1890—Contd.(d) *Authors, &c.—Contd.*

- Jenkins, F. L., Esq., Brooklyn.
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 Woolston & Beeton, London.
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During the Year 1890—Contd.(e) **Societies, &c. (British).**

Accountants & Auditors, Society of.	Mechanical Engineers, Institution of.
Actuaries, Institute of.	Middlesex Hospital.
Agriculture, Central Chamber of.	Mitchell Library, Glasgow.
Arts, Society of.	Peabody Donation Fund.
Association of Chambers of Commerce of the United Kingdom.	Royal Agricultural Society.
Bankers, Institute of.	„ Asiatic Society.
British Association.	„ College of Surgeons.
„ Iron Trade Association.	„ „ in Ireland.
Civil Engineers, Institution of.	„ Colonial Institute.
Cobden Club.	„ Geographical Society.
East India Association.	„ Institution of Great Britain.
Friendly Society of Ironfounders.	„ Irish Academy.
Glasgow Philosophical Society.	„ Med. and Chirurgical Society.
Howard Association.	„ Society, Edinburgh.
International Statistical Institute	„ Society, London.
Liverpool Lit. and Phil. Society.	„ United Service Institution.
Local Taxation Committee.	St. Bartholomew's Hospital.
London Chamber of Commerce.	Sanitary Institute of Great Britain.
„ Hospital.	Society for the Propagation of the
„ Library.	Gospel in Foreign Parts.
Manchester Literary and Philosophical Society.	Statistical and Social Inquiry Society of Ireland.
„ Statistical Society.	Surveyors' Institution.
	University College, London.

(f) **Periodicals, &c. (British).** *The Editors of—*

Athenæum, The, London.	Investors' Monthly Manual, The.
Bankers' Magazine, The, London.	Iron and Coal Trades' Review, The.
British Trade Journal, The, London.	Machinery Market, The, London.
Building Societies, &c., Gazette, The.	Nature, London.
Commercial World, The, London.	Policy-Holder, The, Manchester.
Economist, The, London.	Railway Press, The, London.
Fireman, The, London.	Review, The, London.
Insurance and Finance Leader, The.	Sanitary Record, The, London.
„ Post, The, London.	Shipping World, The, London.
„ Record, The, London.	Statist, The, London.

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